STEEL

PRODUCTION • PROCESSING • DISTRIBUTION • USE

For forty-eight years—IRON TRADE REVIEW

EDITORIAL STAFF

E. L. SHANER, *Editor*
E. C. BARRINGER, *Managing Editor*
E. C. KREUTZBERG, *Engineering Editor*

ASSOCIATE EDITORS

A. J. HAIN, E. F. ROSS, G. H. MANLOVE, J. D. KNOX, A. H. ALLEN

New York B. K. PRICE—L. E. BROWNE
Pittsburgh . . . E. A. FRANCE JR.
Chicago . . . . . W. G. GUDE
Washington . . . . . L. M. LAMM
London . . . . VINCENT DELPORT

Published by
PENTON PUBLISHING CO.
PENTON BUILDING
CLEVELAND, O.

JOHN A. PENTON, *Chairman of Board*
C. J. STARK . . . . . *President*
J. D. PEASE . . . *Vice President*
F. V. COLE . . . . . *Secretary*

BUSINESS STAFF

GEORGE O. HAYS, *Business Manager*
JOHN HENRY, *Advertising Manager*
R. T. MASON, *Circulation Manager*

New York . . E. W. KREUTZBERG, J. F. AHRENS, J. W. HOWE
Pittsburgh . . . . S. H. JASPER
Chicago . . . . . L. C. PELOTT
Cleveland . . . . R. C. JAENKE

Contents . . May 20, 1935

Volume 96 ◆ Number 20

AS THE EDITOR VIEWS THE NEWS 13

Industry Girds for Fight on Wagner Bill 14
Metal Trades Speakers Blast at New Deal 15
Warehouse Group X-Rays Problems, Brion President 17
Gear Makers for Ending All Codes; Sales Rising 18
1934 Rail Output 2.4 Times 1933 19
Production ..... 19 Financial 26
Mirrors of Motordom 20
Windows of Washington 22
Industrial Men in the Day's News 24
Obituaries 26

EDITORIAL—Essentials for Sound National Recovery 27

THE BUSINESS TREND 28

ENGINEERING DEVELOPMENTS:

Welding Refrigerators—II.. 30
Redesigned Truck Scale..... 33
Low-Alloy Steels in Cars.... 34
Artisans in Wrought Metal 35
Sound Screens of Steel..... 38
Methods and Materials..... 40
Steel Brake Step..... 40
Winning Bridge Designs.... 41
Handiwork Exhibition 43
A.S.T.M. Meeting Program 44
Welding, etc. 45
Foundry Conference 47
Progress in Steelmaking.... 50
Gravity Roller Conveyors.... 53
Gear Makers Meeting..... 56
New Equipment 63

MARKET REPORTS AND PRICES 65-85

CONSTRUCTION AND ENTERPRISE 86

ADVERTISERS' INDEX 94

BRANCH OFFICES:

New York . . . . . 220 Broadway
Chicago . . . . Peoples Gas Building
Pittsburgh . . . 1650 Koppers Building
San Francisco . . . . 2413 Milvia St.
Berkeley, Calif., Tel. Berkeley 7354W
Washington . . . National Press Building
Cincinnati . . . 418-420 Sinton Hotel
London . . . . . Caxton House
Westminster, S. W. 1
Berlin . . Berlin, N. W. 40, Roonstrasse 10

Member Audit Bureau of Circulations; Associated Business Papers Inc., and National Publishers Association.

Published every Monday. Subscription in the United States, Cuba and Mexico, one year $4, two years $6; in Canada, one year $6.60, two years $11.20; in Great Britain and European countries, one year £2.

Entered as second class matter at postoffice at Cleveland under the Act of March 3, 1879.

Copyright 1935 by Penton Publishing Co.

The **WILSON VERTICAL TUBE ANNEALING COVERS** will reduce your annealing costs—give shorter annealing cycles—assure automatic temperature regulation—and increase the tonnage annealed through the use of Special Inner Covers.

Sold only by Lee Wilson Engineering Co. and The Wean Engineering Co.,' Inc.

The Wilson Annealing Unit is covered by Patent No. 1952402 and other Patents Pending

This Triple "A" Annealing Unit will produce GREATER TONNAGE with a HIGHER QUALITY at a LOWER COST.

An Exclusive Development of

LEE WILSON ENGINEERING CO

1370 Blount Street • Cleveland, Ohio

SOLD BY THE WEAN ENGINEERING CO., INC., WARREN, OHIO

As the Editor Views the News

CRITICAL days confront American industry. In spite of the vigorous protest of employers, the senate has passed the Wagner bill by the incredible vote of 63 to 12. As if to further display its utter disregard for fair play, the senate also voted, 50 to 21, against an amendment by Senator Tydings to prevent intimidation and coercion of employes by professional labor unions. It is doubtful whether either house, in any of the 74 congresses since the beginning of the republic, has ever acted more overwhelmingly against the unanimous opinion of industrial leaders or ignored more shamefully the rightful interests of American employes.

• • •

If the votes of most of the senators can be taken at face value, the balloting means that five out of every six members of the upper house discredited entirely the arguments advanced by the thousands of large and small employers who protested to their senators, while at the same time they swallowed—hook, line and sinker—the absurd idea that the vociferous leaders of A. F. of L. are the legitimate representatives of all of the employes of the nation. We think it would be interesting to the 63 senators who voted "aye" to ascertain what the more than 20,000,000 unaffiliated employes think of their support of the Wagner bill.

Five out of Six Swallowed

• • •

If any senator should take the trouble to plumb the thoughts of workers who are not members of A. F. of L., I. W. W. or other professional unions, he may get the surprise of his life. He would find, as this writer has found on several occasions, that the attitude of the unaffiliated worker against the labor policies of the new deal far exceeds in bitterness and enmity anything that has been displayed by employers. And why not? Senator Wagner and his 62 partners in the senate have virtually exposed him to the window-smashing, bomb-throwing tactics of any organizer—pseudo or legitimate—who wants to intimidate him into joining a union. The great majority of American workmen want peace and work more than they want union cards. Their employers should continue to protect them from bondage.

Bondage for 20,000,000?

• • •

Three chances remain to save the nation from the disastrous effects of this bill. The first is for industry to make one supreme effort to marshal the facts quickly and effectively so that the members of the house will pause before repeating the mistake of the senate. The second chance is that, if the campaign in the house fails, it may raise sufficient doubt in the mind of the public to induce the President to veto it or insist that it be modified. If these two attempts fail, the only recourse left is to test the constitutionality of the law in the courts. Employers everywhere—large and small—should make one last, strong fight to keep the Wagner bill off the statute books!

Three More Chances!

• • •

The unanimity of industrial opinion against the labor disputes bill is in sharp contrast to the divided counsel on NIRA. In last week's numerous conventions, some organizations passed resolutions urging its abandonment (pp. 15, 18), while in other quarters speakers (p. 14) were asking that the law be continued for two years. On the whole, the attitude of industry as manifested during the week was more openly hostile to many government policies. It is possible that this increasing complaint against restraint is a symptom of increasing confidence. Business volume is improving slightly (p. 65), indicating that natural forces are sufficiently strong to offset the destructive influences (p. 28) of blundering in Washington.

No Agreement on NIRA

E. L. Shaner

Industry Girds for New Fight On Wagner Bill; NRA Fate Up

Washington

OVER the week-end industry was rallying its forces for a last-ditch stand against the Wagner labor-disputes bill which, notwithstanding the most intensive opposition ever waged by business interests to a measure in congress, swept through the senate Thursday, 63 to 12.

Earlier in the week the senate voted to extend NRA on a limited scale to April 1, 1936. This puts both of these controversial measures before the house, which thus far this session has proved to be pretty much of a rubber stamp for the administration. It also put organized labor in a strong strategic position.

Leaders of the house came to the White House over the week-end to discuss the situation. A desire to adjourn early is a complication.

Of the two evils—the Wagner bill and NRA—the latter is the lesser from the standpoint of industry. Noxious as section 7a has proved to be, its potentialities for unsettling labor relations are far inferior to those proposed by Senator Wagner, who virtually gives organized labor a charter for a closed shop in all industry, including even small retail establishments.

President, Congress at Odds

By inversion, organized labor prefers the Wagner bill. It will be content to let NRA and section 7a die provided the house concurs in Thursday's vote of the senate. Labor is in the happy position of being able to make a choice.

The administration faces a problem almost as difficult as industry. Extension of NRA for two years is on the President's list of "must" legislation, whereas the Wagner bill is not. Many new dealers prefer letting NRA die June 16 than to try to carry on for only nine months more. So, assured that labor is satisfied, the administration might reluctantly take the Wagner bill in preference to a short extension of NRA, if confronted with making a choice.

The complicated situation today in Washington gives the administration an excellent leverage on industry. Faced with a labor measure that is generally regarded as the most destructive ever contemplated by a recent congress, industry is in the mood to go along with any compromise. After all the hard things it has said about NRA, industry, caught in the pinchers, may find espousal of NRA the only way out.

Tom M. Girdler, chairman-president of the Republic Steel Corp., last week came out for an extension of NRA for the full two years rather than the nine months proposed by the senate. He characterized a short extension as "futile and only complicating and retarding business recovery." He declared: "The outlook today is hopeful and depends to a considerable degree on the future of NRA and a sharp pickup in the construction industries."

As passed by the senate, the Wagner bill restates labor's right to bargain collectively, virtually outlaws so-called employe representation plans, specifies bargaining with a majority and creates a board of three to be appointed by the President.

Industry's chief indictment against the measure is that it prohibits "coercion or intimidation" by employers but not by labor unions. For an employer to advise an employe not to join a union constitutes an offense. Incidentally, the senate voted down a last-minute amendment to prohibit coercion or intimidation "from any source," proponents of the bill contending that this would destroy its very purpose.

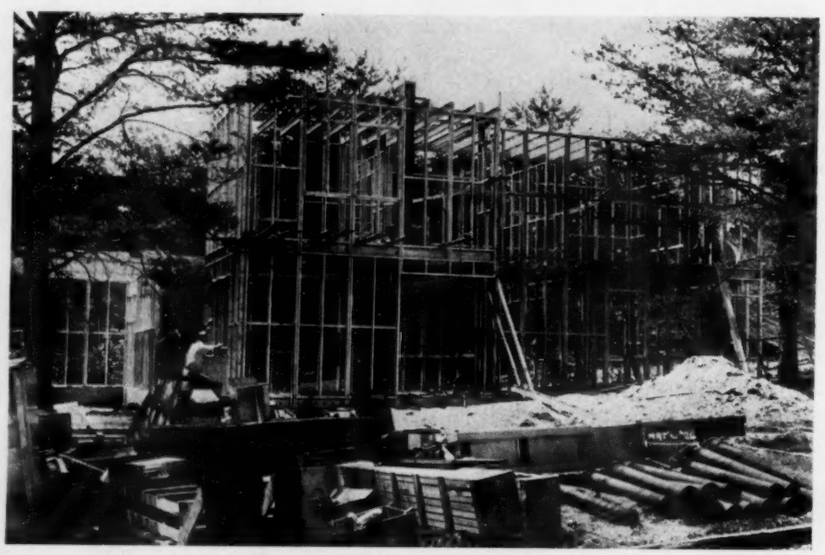
The house labor committee has already reported out favorably a measure similar to the senate bill except that it makes the labor board a part of the department of labor instead of an independent body.

No Semblance of Fairness

So far as steel is concerned, the immediate effect would be to wipe out all employe representation plans, even those as old as Bethlehem, Youngstown Sheet & Tube's and Colorado's. For an employe plan to receive "financial or other support" from a company outlaws it. Organizers for outside unions may solicit or coerce at will without any restraint.

In the automobile industry, the automobile labor board and the proportional method of representation would be abolished. However, this would not be so great a loss to the automobile industry as the demise of employe plans would be to steel,

The House That Five Men Built



Here is the framework of the first Berloy steel-frame house erected in Bethesda, Md., a suburb of Washington. The steel frame for seven rooms and the garage, the plumbing chace, heating and air-conditioning unit, and stairs were put in place in 15 hours by five men. The steel work was fabricated by the Berger Mfg. Co., Canton, O., a division of the Republic Steel Corp., Youngstown, O. More than 500 persons, including government officials, society leaders, members of the diplomatic corps and officials of the interested companies, including Tom M. Girdler, chairman-president of Republic; N. J. Clarke, vice president of Republic, and L. S. Hamaker, vice president of Berger, witnessed the erection of the framework. For a complete description of the house see STEEL *for May 6, page 17*

for the reason the board has not been popular.

As summarized by the National Industrial council, New York, industry is opposed to the Wagner bill because it:

Extends federal sponsorship and encouragement to the closed shop.

Prohibits and penalizes coercion by employers but does not prohibit coercion "from any source." Labor groups guilty of such tactics are not even deprived of the "rights" enumerated in the bill.

Provides for majority rule but does not provide for standards to protect minorities from unjust and discriminatory agreements.

Gives enormous additional power to labor unions but imposes no corresponding responsibility upon them.

Permits a national labor relations board to inject itself in local employment relations not only when a dispute occurs, but when it believes that any situation is "tending" to "lead to a labor dispute that might burden or affect commerce."

Permits this board to investigate and decide the merits of any labor controversy "regardless of whether the disputants stand in the proximate relation of employer and employe."

Permits the board to order "collective bargaining" elections at any time. No limit to the number of elections it could order; no protection against the refusal to order one. The board even could determine who represents employes without calling an election.

(*Please turn to Page* 84)

Metal Trades Convention Speakers Blast New Deal

INCREASING resistance on the part of business interests to the principal features of the government's program was manifest at the National Metal Trades association's thirty-seventh annual convention in Cleveland last week.

A dozen or more speakers sharply criticized the administration for policies pertaining to labor, social security, banking reform, holding corporations; and congress, too, for its radicalism. Much of the fire centered on the Wagner bill.

Some of the expressions were as follows:

ALEXANDER SELLERS, president of the association:

"The Wagner bill undoubtedly is one of the most damaging pieces of legislation ever introduced in congress. It threatens the very existence of industry."

JAMES EMERY, counsel, National Association of Manufacturers:

"The Wagner bill would grant, in vague terms that would stimulate strife, greater power than has ever been proposed for any court. American business should assert itself more vigorously."

G. H. MONTAGUE, NIRA chairman, New York State Bar association:

"With good intentions, but deadliest results, reformers have inflicted nostrums and panaceas that constitute the most extreme punishment ever administered to American business men."

HAMILTON FISH JR., New York congressman:

"The communist group has doubled in the past four years. Miss Perkins should be required to deport aliens in accordance with our laws, which she has flagrantly failed to do."

W. B. BELL, president, American Cyanamid Co., New York:

"The time will come, if the administration pursues its present monetary policies when anyone seeking a loan will first have to see his congressman."

CHARLES A. EATON, New Jersey congressman:

"The ominous fact is that under the present regime the one and only wealth-producing agency—industry—is the object of continuous suspicion, antagonism and attack."

LOUIS RUTHENBERG, President, Servel Inc., Evansville, Ind.:

"None can predict the outcome. The art of propaganda has been perfected (via radio) to a degree that sets at naught all previous standards as to probable effect. If chaos is to be avoided management must compete more intelligently for workers' support."

PROF. E. S. TODD, Miami university, Oxford, O.:

"Much of the social security program is unworkable. European experience has shown that. Real social security lies in sound government."

MALCOLM W. BINGAY, editorial director, *Detroit Free Press:*

"The real danger confronting America is that the people will listen to the siren call of old-world philosophy; that they will listen to treacherous promises of

Headed for Reincarnation

The Japanese want scrap, both ready-made and in the form of ships to be broken up. So they recently purchased about thirty obsolete steamers on the west coast, loaded them with scrap, and after they have delivered their cargoes safely are sending the ships themselves to the break-up yard. The MOGUL MARU, *pictured here in Los Angeles harbor, is a former rum ship which, with its cargo, will shortly reappear in some new useful form. Scrap exports from the United States reached* 1,800,000 *tons last year, two-thirds of it going to Japan. Exports in three months of* 1935 *total* 559,688 *tons. An American scrap exporters' conference to consider this matter will be held at India house, New York, Tuesday. It will be addressed by R. L. Harding, chief, metals and minerals division, department of commerce, and by representatives of foreign governments. Wide World photo*

social security and sell their birthright as free-born citizens."

MALCOLM MUIR, president, McGraw-Hill Publishing Co. Inc., New York:

"The President's banking bill contains more menace to our traditional business and social structure than any other scheme seriously proposed under the New Deal."

JUDGE R. V. FLETCHER, counsel, Association of American Railroads, Washington:

"It is unfortunate, and a substantial impediment to recovery, that so many efforts have been made to apply radical and artificial remedies, to subject industry to treatment that interferes with orderly and natural processes of healing and growth."

Resolutions adopted at the closing session of the convention declare:

"NRA should be allowed to expire June 16, and no further similar legislation should be enacted.

"The social security bill, Wagner bill and Black 30-hour bill are in no sense legislation to stimulate recovery . . . but are certain to delay, if not prevent, recovery, and to increase unemployment.

"The 30-hour bill proposing vastly to increase the cost of production, and upset the balance of economic society, warrants vigorous opposition of employer and employe alike.

"Brought up in a school of American individualism, we object to being directed by legislators into unwanted collectivism of any kind.

"We resent cynical comment on the part of any political servant as to the value of business criticism, when made in sincerity, and filled as it is by love of a common country."

Education Forestalls Strife

"The period since June, 1933, has been marked by severe industrial strife," said Mr. Sellers. "Notwithstanding this turmoil, less than 1 per cent of our membership suffered from labor disputes during the past year and during the last ten years less than 3/10 of 1 per cent have been affected.

"In my opinion, it is due in large measure to the educational activities the association has carried on for a great many years and which serve to develop sound employer-employe relationships.

"Not long ago we asked each of our members for a reply to this question: 'Do you favor a continuance of the NRA?' Four hundred and seventy-nine, or 76.7 per cent, were emphatically opposed. Fifty, or 8 per cent, favored its continuance. Of these 50, a substantial number explained their vote as due to fear of substitute legislation more objectionable than the present NRA. Ninety members, or 14.7 per cent of those voting, advocated the enactment of a modified law.

"In my opinion the NRA is unsound in principle and incapable of enforcement as our system of government is quite unsuited to the practice of regimentation. That portion of the NIRA which most nearly affects the activities of our association, is, of course, section 7a. We cannot hope for peace in the industrial field until final and authoratative answer is given to this question: Is section 7A a mandate for the closed shop?

"The situation confronting us today is truly alarming. Industry has not familiarized itself with the details of the proposed (Wagner) measure, and consequently is not making a determined enough effort to defeat it."

Arbitrary Control Undesirable

"The 30-hour bill would create work by arbitrarily prohibiting every workman in the United States from disposing of more than 30 hours of his work or service," said Mr. Emery.

"It would increase costs and multiply sales resistance. Most of all, it would establish a plenary and arbitrary federal control over all the delicate and complex interrelations of the productive life of the nation.

"The senator from New York would create a permanent labor board to regulate by prohibitory administrative orders and govern by federal injunction, against the whole philosophy of its proponents, every local employment relation."

Referring to the bonus, Mr. Emery said, that if the President's veto is sustained "the nation will rejoice."

Status After June 16 Uncertain

"Three-fourths of American business, whose daily transactions in employment, production, purchase and sale are now regimented and governed by the codes, and executive rules, cannot today tell how much if any of all this executive-made law will continue in existence after June 16," said Mr. Montague.

"Functionaries who now possess authority delegated by or in behalf of the President to act in code matters on a conservative estimate, number upwards of 5000 or 6000 persons."

"The growth of communism and left-wing socialism, its half-brother and sister, is more rapid and extensive in American colleges than in any other sphere of communist activity," said Mr. Fish.

"There are a number of socialists, left-wing socialists, near communists and communist sympathizers in the federal service at Washington, appointed by the President, and holding important and often key positions."

"Complete Collection of Follies"

"Notwithstanding an accumulated demand, estimated by Col. Leonard P. Ayres, one of the world's foremost economists, at $85,000,000,000 for durable goods and construction, our administration and our congress still obstruct the road to recovery so that 9,000,000 men stand idle," said Mr. Bell.

"Only by so comprehensive and complete a collection of follies, achieved and threatened, can the recovery which this demand calls for be held back."

The convention was attended by about 400 delegates. These new councilors for two years were elected: Philip Morgan, Morgan Construction Co., Worcester, Mass., W. L. Hinds, Crouse-Hinds Co., Syracuse, N. Y.; David Wilson, Willys-Overland Co., Toledo, O. They replace H. S. Chafee, Builders Iron Foundry, Providence, R. I.; H. W. Johnson, DeLaval Steam Turbine Co., Trenton, N. J., and A. H. Tuechter, Cincinnati Bickford Tool Co., Cincinnati. All other officers were re-elected.

Are You Cynical?

THE cynic may believe that the age of miracles is past but faith in fairies is not limited by time or place. Our fairies are more robust than the leprechauns and the pixies. They no longer hide in the grass or live with the gnomes. They are found in public places, for they no longer seek concealment. Their voice is that of the radio and they are no longer mysterious, for their field is practically political.

They take the alluring form of a senator from Utopia, a padre with a divining rod, or, perhaps, a versatile practitioner who assumes protean official shapes, or become professors who know all the answers. Temporarily, they may even live in a Cabinet.

Wherever they appear or whatever their shape, they preach alchemy and admit possession of the alkahest. They rub not a lamp but a ballot box, and their kingdom is as boundless as that of Prester John. They seize the gold of the wicked, and distribute it with preternatural skill and generosity, or deliver to the popular maw a shrinking banker, as the giant ate the bones of an Englishman. — *JAMES A. EMERY, counsel, National Association of Manufacturers, in address to National Metal Trades association.*

Warehouse Group X-Rays Its Problems; Brion President

MEMBERS of the American Steel Warehouse association at their twenty-sixth annual convention, held at the Edgewater Beach hotel, Chicago, May 14-16, found cause for both gratification and dissatisfaction in their review of the past year. More than 180 registered at the convention.

High spots of the warehouse situation follow:

The industry has succeeded in solidifying and strengthening itself through a sharp increase in association membership which now embraces about 275 warehouse units.

A small average profit was shown by members in 1934, the first since 1929, but the per cent returns to sales remained low.

Mill relations still are unsatisfactory in various respects.

Foreign steel is a growing menace not only to seaboard warehouses but is also a threat to inland distributors.

Steel warehouses are without a separate code, continuing to operate under the general wholesale trades code.

Lester Brion, Peter A. Frasse & Co. Inc., New York, was chosen by newly-elected directors as president for the ensuing year, succeeding Harold B. Ressler, vice president, Joseph T. Ryerson & Son Inc., Jersey City, N. J.

Other officers elected were: Vice presidents, E. D. Graff, Joseph T. Ryerson & Son Inc., Chicago; Ray D. Love, Betz-Pierce Co., Cleveland; Charles Heggie, Scully Steel Products Co., Chicago; J. F. Rogers, Beals, McCarthy & Rogers, Buffalo; A. C. Castle, A. M. Castle & Co., Chicago, and Clarence C. Dodge, George F. Blake Inc., Worcester, Mass.

Analyzes Warehouse Market

A comprehensive analysis of the iron and steel warehouse market was presented by Walter S. Doxsey, executive secretary of the association, at the opening session in an illustrated lecture on "Progress and Problems."

Tracing the trend in distribution of steel by consuming groups, Mr. Doxsey pointed out that, after making partial deductions for huge unit sales to large interests, 42 per cent of all steel produced is taken by less than 100 consumers, while 58 per cent goes to the general market. Of the latter portion, warehouses sell 21.4 per cent.

Warehouse customers far outnumber those of the mills, the proportion being about 192,000 to 15,000. While 50 per cent of all industrial goods is sold through jobbers, less than 15 per cent of the steel sold is handled by warehouses. This, the speaker declared, is too small a percentage and is much less than that handled by distributors of foreign countries.

Divergent views of different jobbers on selling practices must be corrected and sound merchandising policies must be adopted in order to lower steel costs to the consumer and improve warehouse profits, Mr. Doxsey indicated. The worst problems confronting the industry include:

Lester Brion

Too liberal interpretation of differentials; absorption of trucking charges; waiving of extras; below-cost competition from mills; extension of jobbers' discounts to distributors not entitled to them; unsound mill extras; dumping by mills of sheet and strip seconds.

The answer to the latter problem lies in a mutual understanding between the mills and jobbers, something which can be achieved through unity of the warehouses, he stated.

Mr. Ressler, in his opening address, pointed out that the association in point of numbers is stronger today than at any time in the past and asked for close co-operation between local chapters. Indicating that there may be no violent price changes the next few years, he stated that it seems reasonable that warehouses shall have to expect in the future all of the competition from the mills that they have had in the past unless they can have effective mill extras for small lots, which would give the warehouses some protection on the business that properly belongs to them.

"If that may be the condition that we must face, if we can no longer be speculators, we must become merchants," he remarked.

While the introduction of the steel code has aided the warehouses in their attempts to present their problems dealing with mill relations before the producers, certain conditions still exist which are unsatisfactory and have not lent themselves to solution, it was indicated in the report of the mill relations committee, presented by its chairman, Guy P. Bible, Horace T. Potts Co., Philadelphia.

Failure to obtain differentials on plates and shapes similar to those in effect on bars was described, while practice of mills in selling material from stock rather than on order, at quotations less than warehouse figures, was branded as an unfair practice. Making agency agreements with distributors who are not regarded as legitimate steel warehouses also was condemned.

Should Demand Hearing

Edward L. Ryerson Jr., president, Joseph T. Ryerson & Son Inc., Chicago, in commenting on the committee report, indicated that drafting of the iron and steel code was carried out without due regard for the warehouse and consuming groups and that the association should make itself heard in the event of subsequent changes in various provisions of the code.

Sentiment of the convention was that application of differentials and extras, similar to those in effect on prices of cold-finished steel bars, would be desirable in connection with hot-rolled material, and a resolution to this effect for guidance of the mills relation committee was adopted.

Wisdom of producers in attempting to sell the small consumer direct was questioned in a talk by C. H. H. Weikel, manager, commercial research, Bethlehem Steel Co., Bethlehem, Pa., on "Trends in the Production, Distribution and Consumption of Steel." Development of the continuous mill was pointed out by the speaker as a factor in causing sheet producers to seek large tonnage outlet for economical operations rather than to supply small orders.

The suggestion that warehouses promote the adoption of a standard color code for marking steel was

(*Please turn to page* 85)

Gear Makers for Ending All NRA Codes; Sales Rising

BY UNANIMOUS vote, members of the American Gear Manufacturers association, in convention at Wilkinsburg, Pa., May 14-15, placed that body in opposition to a continuation of existing NRA codes following June 16.

"We record ourselves as favoring the abandonment of the NRA codes on June 16 next when the existing statute expires," said the resolution, moved by E. R. Lyman, Massachusetts Gear & Tool Co., Woburn, Mass.

"Our industry was one of the first to submit its code to the authorities at Washington in 1933 and has cooperated to the fullest possible extent in carrying out the provisions of our gear industry code.

"We believe, however, that the codes now have served their useful purpose and that their abandonment at this time will be decidedly in the interest of further expediting recovery —the primary object to be sought."

The same resolution also expressed the association's opposition to the enactment of any such legislation as the so-called Wagner labor disputes bill, in the belief that such legislation seriously would disturb amicable employer-employe relations throughout the country, to the detriment of both groups and the public at large.

Oppose Shorter Hours

Opposition also was expressed to any further shortening of working hours by legislative enactment, in the belief that this would impose an unbearable load on industry through greatly increased costs and selling prices and that the employe groups would suffer from such action fully as much as, if not more than, employers; and that any such action, through sales resistance at prohibitive costs, would increase unemployment and seriously retard recovery.

Uncertainty as to what sort of governmental supervision the future holds for the industry dominated the annual meeting of the gear manufacturing industry, which immediately followed the adjournment of the association.

H. H. Kerr, president, Boston Gear Works Inc., North Quincy, Mass., as chairman of the code authority, presided over this meeting.

Industry was given a fine chance at self government under NRA, said Mr. Kerr, but did not take advantage of it and failed to demand its rights. He advocated the necessity of keeping track of developments so that the industry will be prepared to take any action which future occasion demand.

"Our industry and all industry is on the fence today," said Mr. Kerr, "and it is up to you whether you will cooperate for the industry as a whole and for your individual benefit. It is up to you to take a determined stand on what you expect for your industry, as well as from its members. If you will sit idly by until the government has regulated your business you will have no recourse."

Mr. Kerr expressed some dissatisfaction over the service the gear industry has obtained from Washington. Despite persistent efforts over a long period, the industry has been unable to get approval of its uniform cost accounting manual.

An interesting picture of the gear industry under the NRA code, compiled from reports by 69 companies, was given by Mr. Kerr. Sales made by the gear industry in 1934 were $12,651,158, compared with $9,705,042 in 1933. The payroll in 1934 was $3,845,608, against $2,775,448 in 1933. Average pay to employes in 1934 was $22.98 a week and 65 cents an hour, as compared with $20.41 a week and 62.3 cents per hour, in 1933. The number of employes in 1934 was 3192, contrasted with 2614 in 1933.

Shortage of mechanics is beginning to be felt sharply, said Mr. Kerr. Of 60 companies answering this question, 46 reported they are unable to find sufficient skilled workmen. Of 66 companies answering, 10 stated they were training apprentices. The making of mechanics, said Mr. Kerr, is one of the essential jobs before the gear industry.

Neal W. Foster, formerly NRA deputy administrator and now with Boston Gear Works Inc., declared that business men and industrial leaders would make more progress at Washington if they had fewer destructive criticisms and more constructive suggestions to offer.

Industry never has been of real assistance to the government, he said, particularly in the attempt to improve employe relations; it has fought the suggestions made by labor, without offering any substitute.

Government To Stay in Industry

He advocated a changed attitude and policy on the part of industry. It is inevitable, he believed, that congress sooner or later will enact labor legislation affecting all industry, so that effective handling of this problem by industry is of vital importance. He also expressed the opinion that the government is certain to continue an industrial program.

Fred Murray, NRA assistant deputy administrator, Washington, also addressed the meeting of the gear industry, devoting his remarks to certain phases of code administration.

Sales by the gear industry, according to J. C. McQuiston, manager-secretary, American Gear Manufacturers association, have averaged better than those of the majority of other industries. At the beginning of 1934 they were about 80 per cent of the 1931 average, while at the beginning of 1935 they had increased to about 110 per cent. At present they are 105 per cent of the 1931 average.

(*See also pages* 24 *and* 56)

New Officers

AMERICAN GEAR MANUFACTURERS ASSOCIATION

President

A. A. Ross
Engineer, General Electric Co., West Lynn, Mass.

Vice President

E. S. Sawtelle
Vice president, Tool Steel Gear & Pinion Co., Cincinnati

Treasurer

J. Harper Jackson
Pittsburgh Gear & Machine Co., Pittsburgh (re-elected)

Manager-Secretary

J. C. McQuiston
Penn-Lincoln hotel, Wilkinsburg, Pa. (reappointed)

Directors

L. R. Botsai
Nuttall works, Westinghouse Electric & Mfg. Co., Pittsburgh

John H. Flagg
Watson-Flagg Machine Co., Paterson, N. J.

Executive Committee

L. R. Botsai

J. Harper Jackson
(re-elected)

H. H. Kerr
President, Boston Gear Works Inc., North Quincy, Mass. (re-elected)

B. F. Waterman
Brown & Sharpe Mfg. Co., Providence, R. I. (re-elected)

Chairman, General Standardization Committee

T. R. Rideout
Nuttall works, Westinghouse Electric & Mfg. Co., Pittsburgh

Stilwell Forecasts Heavier Tool Buying in May

Machine tool sales have been increasing steadily during the last two months and May is expected to show a further substantial improvement over April, according to C. J. Stilwell, vice president, Warner & Swasey Co., Cleveland machine tool manufacturer, and president of the National Machine Tool Builders' association.

"Not only is the volume of orders larger," said Mr. Stilwell, "but there is a better distribution of orders.

Many people are now buying who have not purchased machine tools for a number of years.

"The improvement appears to be the result of a normal resumption of the demand which has been accumulating throughout the depression. The increase on sales of consumers goods has naturally been reflected in a growing demand for machine tools from manufacturers of consumers' goods. In addition there is a growing volume of orders from the durable goods field."

Production

INCREASES at Pittsburgh, eastern Pennsylvania, Detroit, Buffalo and New England advanced the national steel rate 1 point last week to 45½ per cent. This increase was due mainly to releases on automotive requirements on which shipment had been held up the past couple of weeks.. Details follow:

Youngstown—Held at 50 per cent last week, with little change indicated for this week.

Wheeling—Off 8 points to 73 per cent, reversing the upward showing of a week ago. Twenty-seven out of 37 open-hearth furnaces are on active schedule, compared with 30 of 37 a week ago. One large producer continues unchanged, another large producer has dropped one furnace, and a small mill has taken off two furnaces the past week.

Pittsburgh—Up 2 points to 38 per cent, due to the effect of improved tin plate specifications, release on automotive steels on which shipments were held up two weeks ago, plus scheduling of rail production by a local producer. A leading mill operated at about 35 per cent, an increase of about 3 to 4 points, whereas a leading independent expanded to a point some 20 per cent ahead of a month ago and is at its best level individually for any month of 1935. National Tube is resuming with two of its three open-hearth furnaces at McKeesport, Pa., after an idleness of over six weeks.

For the third successive week the number of active steelworks blast furnaces in this district has increased, with 23 of 60 stacks now in blast. During the past week National Tube resumed operations in a second Monongahela works furnace, which had been banked formerly. Other individual rates continue unchanged.

Chicago—Dropped 1 point to 51½ per cent, with preliminary schedules for the current week indicating a further drop of possibly 5 points. This would mark the lowest schedule in nearly two months. Blast furnace operations are unchanged, with 14 of 36 steelworks stacks active.

New England—Up 4 points to 50 per cent last week, with schedules planned for this week indicating an improvement in operations to close to 60 per cent.

Central Eastern Seaboard—Steelmaking is a shade higher at approximately 28 to 29 per cent. Operations have been holding at around this level for several weeks, with only very minor variations. Were it not for the uncertainty with regard to the future of the steel code there is little doubt, according to trade leaders, that operations would be substantially higher.

Buffalo—Up 2 points to 32 per cent, with indications of a further rise to 37 per cent this week. Two additional open hearths will be scheduled, making 14 active. Gains in new business as well as more liberal releases on old orders are general. Present production promises to be maintained this month.

Birmingham—Held at 54½ per cent, with 12 open hearths active in the district. At the end of this month or early in June five open hearths are expected to be taken off.

Detroit—Advanced 12 points to 94 per cent last week, with one producer operating all eight and another operating eight out of nine.

Cleveland—Unchanged at 51 per cent, National Tube Co., Lorain, lighted one open hearth, operating nine, while Corrigan, McKinney Steel Co. took off one, working seven. Otis Steel Co. continued with four.

Steelmaking Operations

Percentage of Open Hearth Ingot Capacity Engaged in 10 Leading Districts

	Week ended May 18	Change	Same week 1934	Same week 1933
Pittsburgh	38	+ 2	51	25
Chicago	61½	− 1	64	33
Eastern Pa.	28½	+ ½	45	18
Youngstown	50	None	62	45
Wheeling	73	− 8	74	70
Cleveland	51	None	78	58½
Buffalo	32	+ 2	66	38
Birmingham	54½	None	53½	30
New England	50	+ 4	84	†
Detroit	94	+12	100	38
	45½	+ 1	59	40

†Not reported in 1933.

1934 Rail Output 2.4 Times 1933 Total

INCREASE of 142 per cent over 1933 is registered in statistics of steel rail production for 1934, the total being practically two and a half times as great, according to figures announced by the American Iron and Steel institute, New York. Total production of steel rails of all forms and analyses in 1934 was 1,010,224 tons, compared with 416,296 tons in 1933. This was the second consecutive increase in rail tonnage and 1934 almost equals 1931 in production.

Most tonnage was in weights from 100 to 120 pounds per yard. In 1933 weights over 120 pounds per yard exceeded those of 100 to 120 pounds for the first time, but in 1934 this position was not retained. However, 31,805 tons weighing more than 136 pounds to the yard were rolled. This is the first time these extreme weights have been segregated by the institute. In the total are included 29,988 tons of girder and H tee rails and 1598 tons of alloy rails.

Active rail mills numbered 17, of which five were in Pennsylvania, three in Alabama, two each in Ohio and Indiana and one each in New York, Maryland, West Virginia, Illinois and Colorado. Pennsylvania mills produced 307,916 tons, almost one-third of the total.

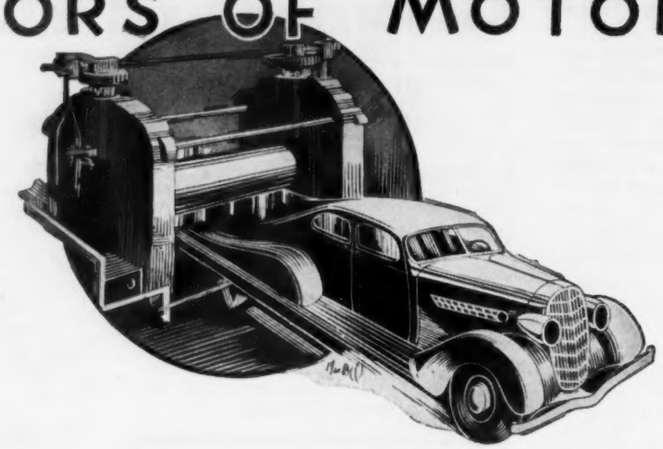
Production of Rails by Processes

Gross Tons

Years	Open-hearth	Bessemer	Electric	Rerolled*	Total
1914	1,525,851	323,897	178	95,169	1,945,095
1915	1,775,168	326,952	.....	102,083	2,204,203
1916	2,269,600	440,092	.....	144,826	2,854,518
1917	2,292,197	533,325	.....	118,639	2,944,161
1918	1,945,443	494,193	.....	101,256	2,540,892
1919	1,893,250	214,121	50	96,422	2,203,843
1920	2,334,222	142,899	297	126,698	2,604,116
1921	2,027,215	55,559	5	96,039	2,178,818
1922	2,033,000	22,317	.....	116,459	2,171,776
1923	2,738,779	25,877	118	139,742	2,904,516
1924	2,307,533	16,069	.....	109,730	2,433,332
1925	2,691,823	9,687	.....	83,747	2,785,257
1926	3,107,992	12,533	.....	97,124	3,217,649
1927	2,717,865	1,566	.....	87,055	2,806,486
1928	2,580,141	2,718	438	64,196	2,647,493
1929	2,662,163	3,486	723	55,766	2,722,138
1930	1,834,933	2,137	45	36,118	1,873,233
1931	1,135,551	813	15	21,372	1,157,751
1932	393,014	64	.....	9,488	402,566
1933	397,792	300	.....	18,204	416,296
1934	982,073	†2,032	.....	26,119	1,010,224

*Rerolled from old steel rails. †Includes electric steel.

MIRRORS OF MOTORDOM



DETROIT

ACCORDING to the newspapers, the strike at the Chevrolet transmission plant in Toledo was settled last Monday after W. S. Knudsen, a vice president of General Motors; Edward F. McGrady, former ace lobbyist of the A.F. of L. who is now an assistant secretary of labor; Francis J. Dillon, an organizer for the federation of labor, had sat around a table for more than 20 hours.

Superficially, this is correct; the details were arranged in Toledo. But it is just possible that the Toledo conference was window dressing, and that the strike may actually have been settled almost a week previous when a high official of General Motors conferred with Donald R. Richberg, than whom few are closer to the President. It is possible, too, that the contacts which the Automobile Manufacturers' association has maintained in Washington helped.

This supposition could not be proved and, for obvious reason, the principals would deny it. Nevertheless, there are a good many in Detroit who suspect it to be the truth. The clincher may have been the indication, as noted in this department two weeks ago, that the entire automobile industry—even including Ford—would shut down indefinitely unless labor stopped its sniping.

Refuse To Tolerate Disorder

The automobile industry is young and vigorous. It has contributed more to recovery than any other major industry, and knows it. Alfred Sloan Jr., Walter Chrysler, Alvan Macauley, C. W. Nash and other "tops" can talk tougher and suaver, at the same time, than the executives of any other big industry. And while Henry Ford has not signed the automobile code, he is co-operating unofficially and enabling the industry to present a united front.

Organized labor, it is understood, has been on its honor not to foment strikes or in any way to handicap the recovery of business at this time. In return, it is supposed to have been given a free rein in congress on labor legislation, and if labor can push over the Wagner labor disputes bill, to mention only one objective, the President will sign it. Generally speaking, labor difficulties in recent weeks—including Toledo—have been entirely local and the result of unrelated groups getting out of hand.

The sequence of events appears to be this: Automobile manufacturers took the position that, rather than combat a guerilla warfare with labor, they would close, the consequence of which would be to paralyze parts and material sellers in every section of the country. The administration in turn put organized labor on the spot. The negotiations at Toledo were largely face-saving for labor.

Parts Suspensions Lifted

Chevrolet knew all the time what the end would be, for it kept its vendors operating on a moderate scale to the extent of their storage capacity. As forecast here a week ago, Chevrolet early last week lifted practically all of its suspensions and its suppliers will be operating at full speed so soon as the parts and supplies accumulated over the past three weeks have been depleted.

Now, as for some weeks, the chief labor danger confronting the automobile industry is the independent action of local unions. In their hearts A. F. of L. executives may hope for such activity, but openly and officially they cannot lend support and their influence during negotiations must be for speedy settlements. But the industry realizes that it dare not nap, that only about 15 per cent of employes in any industry are genuinely loyal, and that the fealty of the remainder must be purchased every pay day.

The concessions Chevrolet made—and which may set the pattern for others—include a 4-cent an hour wage increase with a minimum of 54 cents, negotiation of seniority rights, recognition of the shop committee, time and one half for more than 48 hours a week, and collective bargaining with representatives of employes in proportion to their proved strength.

The price labor is paying is typified by this situation: A worker earning the minimum of 50 cents an hour lost about $68 while out on the strike. On the new basis of 54 cents, and assuming that he is fortunate enough to be employed steadily at 40 hours a week, he will have to work until the week ended Feb. 8, 1936, to recoup his strike loss. Not until Feb. 10 will he benefit.

It will be interesting to watch the progress of the Wagner bill from now on. Also to see if the automobile labor board, which did not figure at all in the Toledo situation and has no friend in labor, survives the termination of the present automobile code, June 16.

When the Toledo strikers returned last Tuesday and Wednesday it was as though they had been out for a holiday. No equipment had been disturbed and work was resumed where it had been left off April 22. For a number of weeks at least, the Toledo transmission plant will be operating at capacity to whittle down the backlog of orders for new Chevrolets.

No More Bottlenecks

But for the long pull, a change will become evident. The manufacture of Pontiac transmissions has been permanently transferred to Buick at Flint; this will cost Toledo 800 to 900 sets daily. Transmissions for the Chevrolet truck will be produced at the newly-created Muncie plant, and this too will drain Toledo of 800 to 900 sets daily. But as noted, Toledo will not feel any tangible effects this quarter.

Except for lineshafts, the raw material for the Toledo and Muncie plants are forgings shipped from the gear and axle division in Detroit. Thus, so far as steel suppliers are

concerned, the flow of raw material will be to Detroit as in the past.

Chevrolet production, which had just attained a peak for the season at 28,700 units weekly when the Toledo strike broke, was down to about 10,000 units in the week ended May 11, and last week showed a slight gain. All assembly plants excepting Norwood and Atlanta were again operating by the end of last week, and the current week will see something approaching normal assembly.

It is typical of the hard-fighting automobile industry that while its executives were standing shoulder to shoulder against the common danger emanating from Washington, the sales departments of these executives in competition with Chevrolet were fighting equally hard to break off some of Chevrolet's best dealers and to corral as many orders as possible.

New Spirit at Rouge Plant

This tacit co-operation of Ford with the remainder of the industry may signify a changed attitute that will have an important bearing on prices shortly.

As has frequently been recorded in this department, the atmosphere at Ford has changed completely in the past year or so. Over the radio, in its advertising, toward the remainder of the industry, even toward suppliers, a much more co-operative and helpful spirit is mainfest.

Let no one mistake that Ford purchasing officials have become softies or that they are not close followers of the market, but they have been going along with the steel and other codes, and some salesmen have to think back months to recall the time when price was questioned. In fact, some salesmen to whom a trip to the Rouge was an ordeal now look forward to it.

Apparently, even if NRA is extended an open market price situation will develop in iron and steel next month. It would be only a return engagement if manufacturers seeking additional tonnage went after it in the usual manner—by cutting prices.

Naturally, Ford will demand the same prices that its competitors get, but if the sweetness and light that have characterized Ford methods in recent months survive the NRA period those producers who try to retain a remunerative price basis at least will not have to encounter a barrage at the Rouge.

Some steel buyers believe that the forthcoming era of open prices will develop competition akin to survival of the fittest. No one has held an umbrella over the automotive industry, they maintain, and price competition breeds more economical production and is a desired stimulus.

Also upon Ford more than any other single manufacturer of automobiles rests the issue whether the last half year will be mediocre or moderately good from the standpoint of automobile production.

Ford's goal for 1935 was publicly stated as 1,000,000 cars. Privately, there was some belief that the goal was nearer 1,200,000 units than an even million. Dealers were informed that they should expect to do 65 per cent of their year's business in the first half. Over a period of years, 60 per cent of automoblies have been made in the first half.

Used Cars Backing Up

Up to last Saturday, Ford had assembled about 660,000 cars this year. As against a recent peak of 40,000 cars weekly, the Ford gait is now 35,000 units. The daily rate of about 6900 jobs is unchanged, but the Rouge plant has dropped down to a 5-day week.

For one reason, it was beyond expectation that a 40,000 weekly rate could be maintained indefinitely. For another, used cars have backed up seriously on Ford dealers, and the ability of a good many to press new car sales is restricted by the frozen condition of their used car departments. Some of the larger dealers fell down on their April quota.

Ford will come up to June 1 with a total of about 715,000 cars off the line. The June schedule is 120,000 cars. Thus in the first half year more than 80 per cent of the stated 1935 goal will have been achieved. It may be no coincidence that dealers a few days ago were advised that they should try to do 80 instead of 65 per cent of their annual business in this half.

Considering that in the last half year normally only 40 per cent of an annual output is produced, that the cream of the buying season is past, and that 30 to 45 days normally are out for model changes, were Ford to make 400,000 jobs between July 1 and Dec. 31 it would be good.

Incidentally, Ford's truck and commercial car business has been phenomenal. In the first four months, sales have totaled 73,269, against 39,485 a year ago. Not since 1926 has this end of the business done so well.

There is some talk that Ford will make no major changes before the closing weeks of the year, and that if Plymouth and Chevrolet spring something radically new in the early fall Ford will meet the situation by cutting prices. This is predicated upon the report the Ford engineering staff is concentrating on the new Lincoln.

One-Piece V-12 Block

This medium-price Lincoln, by the way, will be a V-12, the engine being virtually a Ford V-8 with four additional cylinders. Bore and stroke are said to be virtually identical with the Ford, and that the displacement will be 330 cubic inches. The block will be cast in one piece—quite an achievement for the foundry—and the cylinder head will be cast aluminum. Viewed on the testing block, only the four additional cylinders are said to differentiate it from the Ford engine.

Incidentally, whether or not Ford changes in the early fall, as some of its competitors may do, or waits until December, certain improvements appear to be maturing. One reason for recent large expenditures for the foundry at the Rouge is the probability that the present aluminum pistons will be supplanted by cast steel ones, of a high alloy content similar to the cast steel crankshafts. These new pistons, it is understood, have a crowned top which greatly increases the compression and adds as much as 15 miles to the top speed of the car. Rings are mounted as close as possible to the top, indicating that the problem of the extreme heat generated at the top of the piston has been overcome.

There is also the possibility that the bottom of the radiator grille, instead of curving in, will be pushed forward, giving more of a scoop effect. This would result in lengthening the lower half of the hood and also would accentuate the V of the grille. Another Ford experiment which has possibilities of being adopted for 1936 models is a new type of steel wheel.

Automobile Production

Passenger Cars and Trucks—U. S. Only
By Department of Commerce

	1933	1934	1935
Jan.	128,825	155,666	292,765
Feb.	105,447	230,256	340,544
Mar.	115,272	338,434	429,830
Apr.	176,432	352,975	*475,000
4 mo.	525,976	1,077,331	*1,538,139
May	214,411	330,455	.....
June	249,727	306,477	.....
July	229,357	264,933	.....
Aug.	232,855	234,811	.....
Sept.	191,800	170,007	.....
Oct.	134,683	131,991	.....
Nov.	60,683	83,482	.....
Dec.	80,565	153,624	.....
Year	1,920,057	2,753,111	.....

*Estimated.

Estimated by *Cram's Reports*

Week ended:

May 4	110,865
May 11	87,395
May 18	89,750

WINDOWS OF WASHINGTON

WASHINGTON

EVERY indication points to machine tool and equipment manufacturers faring well in the distribution of the $4,000,000,000 work relief program.

Informal discussions have been taking place between officials of the army and navy and Frank C. Walker, applications chief. The ordnance bureau of the war department is considering $5,000,000 worth of machine tools, and the navy between $6,000,000 and $16,000,000.

It will be recalled that the ordnance bureau recently acquired about $2,300,000 worth of machine tools in an effort to bring its shops up to date.

No formal applications have been filed with Mr. Walker up to this time by either branch of the service. Apparently a selling job must be done with Mr. Walker, but the disturbed situations both in Europe and in the Far East are powerful arguments.

Fast Spenders DeLuxe

Last Thursday the President's allotment board approved projects totaling $1,091,802,200. From the fact that it only took two hours to O.K. a billion dollars it is apparent that the task was a rubber stamp one. On this basis, the four billion could be allocated within the legal 8-hour day set up by NRA.

A rough outline of this billion dollars augurs well for structural steel and reinforcing bars, especially in view of $200,000,000 for highway, road and street construction, a like sum for grade crossing elimination, and $100,000,000 to complete similar obligations incurred by PWA. These expenditures fall within the province of the bureau of public roads.

War department engineers are granted $102,186,500 for general projects, $10,000,000 for the Quoddy tidal-electric project in northern Maine, and $35,000,000 for Mississippi and Missouri river projects.

Other allotments made last Thursday include $100,000,000 for rural resettlement, $249,860,000 for the housing program of PWA, $100,000,000 for 140 projects in Wisconsin toward which the state will contribute $106,000,000 and $7,500,000 toward a sewage treatment plant in New York to cost $25,000,000.

Even in rural resettlement steel will benefit from piping and other household uses for iron and steel, which are small individually but large in the aggregate. It is understood that the Wisconsin projects envision considerable tonnages of structural steel and reinforcing bars. At this time it looks as though the Quoddy project will go largely reinforcing bars.

Must Meet Fundamentals

President Roosevelt, in connection with the four billion dollar work-relief program, has set down six fundamental points, when considering proposed projects.

These include (1) projects shall be useful, (2) projects shall be of a nature that a considerable proportion of money spent will go into wages for labor, (3) projects which promise ultimate return to the federal treasury of considerable proportions of the costs will be sought, (4) promptly spent, (5) give employment to those on relief rolls and (6) projects allocated to localities in proportion to those on relief rolls in those areas.

It is reported here on good authority that the administration is considering a requirement that private industry receiving orders from the four billion dollar work fund will have to fill all extra jobs from relief rolls. It is said that there is a division of opinion on this matter among government officials and no definite statement has yet been made public on this point.

It is insisted in other quarters that the President will hold to his former intention of putting 3,500,000 persons to work directly on public projects, without taking into consideration jobs in supplying materials and equipment.

ROPER ADVISORY COMMITTEE WOULD IMPROVE SECURITY

Two special committee reports of the Roper business advisory council express complete sympathy for the objectives sought in the President's pending social legislation, but definite constructive suggestions for improvement are expressed. One of the reports deals primarily with unemployment insurance, while the other expresses recommendations of the council on old age security.

One of the reports recommends employes participation with the employer in unemployment insurance.

With regard to the old age security sections of the bill, the committee's report expresses full approval but points out that the cost of carrying out projects under the present bill would be extremely high. Within 10 years, it is shown by the report, the plan would mean an expense to the federal government of $500,000,000 a year, and an equal cost to the states. These estimated costs indicate the necessity of keeping the grants within the limits specified in the bill.

The council, which takes issue with the President, is the one the White House paraded recently in an effort to prove that the chamber of commerce of the United States was not representative of general business.

SENATE DEBATE PUTS CREPE ON STEEL PRICING PLAN

There is a strong feeling in some influential quarters at NRA that when the steel code comes up for revision —as it must if the organization's life is extended—that the whole basing point situation will come in for a good airing.

Just what, if anything, the Presi-

dent will do on this point is a moot question. There are those in authority at NRA who are of the opinion that he has already washed his hands of the whole matter and that he will not do anything at all as the result of the studies made by the federal trade commission and NRA.

It is still the strong belief at NRA that that organization will hold to its past and present attitude on the matter of the basing point and that in the end it will probably be found to be a part of the iron and steel code.

In fact, it is said, that any new steel code which may become effective will not be unlike the present one, although it is generally conceded that under the new setup it will be necessary to make some changes in the code.

More Power for Government

One of these will undoubtedly give the government itself a bigger stake in the code authority or whatever the code committee will be called after June 16.

Just before it voted to extend NRA until next April 1 the senate referred to the steel code. The definite question was asked whether the iron and steel industry could be considered a mineral natural-resource industry. The consensus of opinion among the members of the senate indulging in this debate was that it could not be so considered. This is the opinion also expressed by members of the national recovery board.

Senator Shipstead asked Senator Harrison during the debate if the Pittsburgh-plus system of price fixing can be continued in the steel code, which brought about the discussion on the basing point question. The senator from Minnesota said that he thought there should be more basing points in the steel code whereat Senator Harrison said: "I agree with the senator that more basing points should have been established. It is my considered opinion and I have so stated before, that 90 per cent of the criticism which has been hurled at the NRA could be obviated by certain changes that might be made in the administration of NRA."

Referring to the exception in the Clark resolution for price fixing being allowed for industries in the mineral natural-resource class Senator Clark said that "steel is not a mineral natural resource" and he said further "I think everybody will agree that the steel code is clearly outside of this exception."

Price Fixing Is Out

Mr. Shipstead still was not satisfied about the steel situation for he put this question to the senators in charge of the resolution: "Then am I to understand that the steel code is eliminated so far as concerns price fixing under the so-called 'base rate system', the system which is a modification of the former Pittsburgh-plus system?" Senator Clark answered "absolutely."

Further continuing this answer, Senator Harrison, in charge of the bill, said: "I may say to the senator that the experts of NRA tell me that steel is not construed as one of the mineral natural-resources as to which price fixing might be permitted, and that only through establishing basing points could the price fixing idea be approached."

Center of Sheet and Strip Output and Use Is in Ohio

CENTERS of both production and consumption of steel sheets and hot rolled strip steel are located in Ohio, according to calculations by the American Iron and Steel institute.

Morrow county, near the center of Ohio, is the geographical center of sheet steel production, while the center of sheet consumption is in Paulding county in the northwestern corner of the state. The center of production of hot-rolled strip is in Sandusky county, Ohio, about 75 miles due south of Detroit, and the imaginary center of consumption of this product is located in Lake Erie near Toledo, O.

By far the largest single consumer of both sheet and strip is the automotive industry, estimated to have used about 48 per cent of the strip and 36 per cent of the sheets produced last year. Concentration of a large proportion of this consumption within relatively few miles of Detroit has drawn toward that city the center of consumption of both products.

Sheet consumption is centered around a point farther south than strip, due to the important tonnages of steel sheets used by manufacturers of such products as furniture, stoves, agricultural machinery and farm equipment, located throughout the country.

Also in Ohio—near Crestline—is the center of steelmaking capacity of the United States (STEEL, *Jan. 28, p. 12*).

Harding Is Elevated

Iron and steel division and minerals division of the department of commerce, Washington, have been consolidated and are now known as the metals and minerals division. Ralph L. Harding, heretofore chief of the iron and steel division, is now head of the combined division. R. J. Lund is chief of the minerals section.

Carbon steel holds its own in the railroad field in the new streamlined Baltimore & Ohio train—the Abraham Lincoln—being put into service between Chicago and St. Louis. Scheduled to leave St. Louis daily at 9 a.m. it will depart from Chicago at 4 p.m. for the return trip. There are eight cars, for which two moderately streamlined locomotives have been built. Among new features are the Duryea cushion underframe which permits superstructure of the cars to float upon the underframe, and the Tomlinson tight-lock coupler. As the cars slide together this coupler not only connects the cars but also at the same time hooks up the steam pipes, signal system and air brakes. Car steps drop down by pressing a button and fold up when the door is closed. The observation car at the end of the train is rounded. See also p. 34

Industrial Men in the Day's News

A. A. Ross, New President, American Gear Manufacturers Association

He has been associated with a leading electrical manufacturing interest for over 30 years.

Starting as a machinist, he soon became active in the development of various types of gearing.

During the war he tackled the problem of overcoming wear on reduction gears in government ships.

A. A. ROSS, last week elected president of the American Gear Manufacturers association, long has been active in that group and served as its vice president and also as chairman of its general standardization committee.

On graduating from Pictou academy in Nova Scotia in 1894, he entered employ of the General Electric Co. as machinist apprentice. After completing a mechanical engineering course in night school in 1897, he joined the railway engineering force of General Electric and was associated with the late W. B. Potter in the development of the long life transportation gearing of the present day.

When the United States entered the World war and rushed into service a fleet of ships propelled by steam turbine driven reduction gears, then a comparatively new type of drive, Mr. Ross was assigned to the port of New York to investigate and overcome the cause of rapid wear and failures on the gears of ships operated by the Emergency Fleet corporation. After successfully completing this assignment he was placed in charge of General Electric's design of high-speed and heavy-duty turbine reduction gears.

In 1923, when General Electric consolidated the manufacture of all types of gearing at its West Lynn, Mass., plant, Mr. Ross was placed in charge of the centralized engineering and manufacturing gear departments, with headquarters at West Lynn. In this capacity he continues to serve.

♦ ♦ ♦

Hanson Thomas, general manager of sales of Oliver Iron & Steel Corp., Pittsburgh, has been elected a vice president of the company. He continues as general manager of sales as for the past three years.

♦ ♦ ♦

W. B. Sullivan, pioneer in the development and manufacture of heat and corrosion resistant alloy castings, and organizer of the Michiana Products Corp., has become associated with the alloy department of Lebanon Steel Foundry, Lebanon, Pa. He will direct a separate alloy foundry, equipped with induction melting furnaces and special heat treating facilities.

♦ ♦ ♦

James T. Duffy Jr. is the new president of the reorganized Read Machinery Co. Inc., York, Pa. At one time he was general superintendent of the Detroit plant of Thompson Products Inc.; later was general manager of the Nice Ball Bearing Co., Philadelphia; and recently has been active as consulting management engineer.

Other officers of the Read organization include: Vice president in charge of sales and treasurer, T. F. Freed; vice president in charge of operations, J. I. Spangler; and general field engineer and secretary, J. A. Eades.

Harry Read, former founder and president of the company, is now a member of the board of directors.

♦ ♦ ♦

C. V. Hackman, for many years manager of the Mount Union, Pa., and East Chicago, Ill., plants of Harbison-Walker Refractories Co., is now associated with the Stowe-Fuller Refractories Co., Cleveland, as manager of plants. He was also an organizer of the silica plant known originally as the Mount Union Refractories Co., later the United States Refractories Corp., which operated a firebrick plant at Barrett, Pa.

♦ ♦ ♦

George K. Conant, Sligo Iron Store Co., St. Louis, has been elected president of the St. Louis chapter of the American Steel Warehouse association. Other officers include: Vice presidents, Elmer W. Fleer, Schurk Iron Works, and W. Milner Donovan, Donovan Iron & Supply Co.; secretary, Roy De Stabler, Beck & Corbitt Co.; and treasurer, Richard B. Wilson, Joseph T. Ryerson & Son Inc.

♦ ♦ ♦

Walter H. Wiewel has been appointed manager of sales of tubular products for Jones & Laughlin Steel Corp., Pittsburgh, effective June 1, succeeding the late F. D. Grunder, who had held that position since 1916. Mr. Wiewel has been manager of tube sales of Timken Steel & Tube Co., Canton, O., since 1932. In 1910 he was

Walter H. Wiewel

associated with the Cleveland office of Cambria Steel Co., Johnstown, Pa. Four years later he became identified with United Steel Co., Canton, and in 1918 was appointed assistant general manager of sales of the successor company, the United Alloy Steel Corp. Then in 1925 he was appointed manager of the New York district office of Standard Seamless Tube Co., Ambridge, Pa., now a part of Spang, Chalfant & Co. Inc., and later joined Timken Steel & Tube.

♦ ♦ ♦

F. H. Webster has been appointed director of purchases for the White

Motor Co., Cleveland, succeeding Bert Grave, who has been promoted to the production staff. Mr. Webster for 18 years has been director of purchases for the Columbia Axle Co., Cleveland, prior to that being associated with the Timken-Detroit Axle Co. and other automotive interests.

♦ ♦ ♦

Frank C. Moyer, formerly vice president and general manager of sales in the Detroit office of Heppenstall Co., has been appointed general manager of sales for the American Shear Knife Co., Pittsburgh. He will have offices at 345 West Chicago boulevard, Detroit.

♦ ♦ ♦

Karl Landgrebe, vice president of the Tennessee Coal, Iron & Railroad Co., Birmingham, Ala., has been nominated for next president of the Birmingham Rotary club.

♦ ♦ ♦

Lee Wright has been appointed sales representative for Republic Steel Corp., with headquarters at 401 Atlas building, Salt Lake City, Utah. Since 1902 he has been associated with a hardware interest in Salt Lake City.

♦ ♦ ♦

D. M. Averill, for 10 years manager of the Racine, Wis., division of Nash Motors Co., Kenosha, Wis., has been given the added duties of manager of the main works in Kenosha, succeeding the late Patrick J. Moohan.

♦ ♦ ♦

Vernon H. Schnee has been appointed to the staff of Battelle Memorial institute, Columbus, O. He has had experience in the development of inhibitors, lubricants and nonferrous alloys, work which he will continue in his new association.

♦ ♦ ♦

Leon L. Clore has been appointed to the sales engineering department of Austin-Hastings Co. Inc., Cambridge, Mass., ParKett machinery division. With headquarters in Worcester, Mass., he will cover Rhode Island and Worcester county, Massachusetts.

♦ ♦ ♦

H. B. Knowlton, metallurgical engineer, International Harvester Co., Chicago, has been elected chairman of the Chicago chapter of the American Society for Metals.

J. F. Calef, Automatic Electric Co., has been chosen vice chairman. K. H. Hobbie, Driver-Harris Co., continues as secretary-treasurer.

♦ ♦ ♦

L. W. Lyons, for many years manager of the credit department for Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa., and associated with this company since 1904, has been elected treasurer, succeeding Herman F. Baetz, retired. A member of the National Association of Credit Men, Mr. Lyons also has been assistant secretary and assistant treasurer for Westinghouse.

V. F. Covert, active in the Westinghouse accounting department on cost investigation and system work since 1911, has been elected assistant comptroller. He was chief clerk of the South Philadelphia plant in 1919, works auditor in 1924, supervisor of district accounting at Pittsburgh in 1928, assistant general auditor in 1929, and auditor of receipts and disbursements in 1931.

J. K. B. Hare, associated with the Westinghouse Pittsburgh sales office, has been named manager of the Buffalo office, succeeding Harry F. Boe, who has been made assistant manager of the company's eastern district with headquarters in New York.

♦ ♦ ♦

Russell Begg, formerly chief engineer of the Midland Steel Products Co., Cleveland, has joined the central organization of the General Motors Corp., Detroit. He will be engaged on special engineering assignments.

♦ ♦ ♦

H. B. Kirkpatrick, vice chairman of Koppers Building Inc., Pittsburgh, has been elected president of the Pittsburgh chamber of commerce.

William P. Witherow has been reelected second vice president of that body.

♦ ♦ ♦

Frederick D. Hansen, formerly secretary and general manager of the Federal Pressed Steel Co., Milwaukee, has been elected a director and executive vice president of the Perfex Radiator Co., Milwaukee. He formerly was an executive of the Eddystone Ammunition Co., division of Baldwin Locomotive Works.

♦ ♦ ♦

G. G. McDonald has been appointed southwestern sales representative for Bliss & Laughlin Inc., Chicago, manufacturer of cold finished bar steels and shafting. With headquarters at 3502 Rosedale street, Dallas, Tex., he will cover Arkansas, Oklahoma, Texas and boundary cities of Texas and Louisiana.

♦ ♦ ♦

Charles Kauderer has become affiliated with the Clearing Machine Corp., Chicago, as Michigan representative, for the sale of its stamping presses, air cushions and die duplicators. Identified with the stamping and die industries for a number of years, his associations having included the Fisher Body Corp., Mullins Mfg. Co., Briggs Mfg. Co., and Motors Metal Mfg. Co. His headquarters are at 205 Machinery building, Detroit.

♦ ♦ ♦

H. S. Vassar, laboratory engineer, Public Service Electric & Gas Co., Irvington, N. J., has been nominated for president of the American Society for Testing Materials. Other nominations include: Vice president, A. E. White, professor of metallurgical engineering and director of the department of engineering research, University of Michigan, Ann Arbor, Mich.; and an executive committee comprising W. H. Graves, chief metallurgist, Packard Motor Co., Detroit; R. L. Hallett, National Lead Co., Brooklyn, N. Y.; N. L. Mochel, metallurgical engineer, Westinghouse Electric & Mfg. Co., Philadelphia; H. H. Morgan, manager, rail and fastenings department, Robert W. Hunt Co., Chicago, and W. R. Webster, chairman of the board, Bridgeport Brass Co., Bridgeport, Conn.

Streine Heads New Division Of Mackintosh-Hemphill

MACKINTOSH-HEMPHILL CO., Pittsburgh, through Col. J. S. Ervin, president, has announced the establishment of a finishing machinery division for the company and appointment of Frank H. Streine, veteran designer and builder of finishing machinery, to be head of the division. Mr. Streine was for years vice president and general manager of the Streine Tool & Mfg. Co., and more recently president of the Mill Equipment Co.

The machinery division of Mackintosh-Hemphill Co. will be devoted to construction of auxiliary steel mill equipment for shearing, slitting, flattening, forming, corrugating, and handling sheets, strip, tin plate, billets and slabs. The company plans to build rotary side trim shears, rotary gang slitters, squaring shears, double end cut shears and all types of levelers, recoilers and tables.

Frank H. Streine

Mr. Streine has been in the finishing mill field for some 20 years. He will be located between the company's headquarters in Pittsburgh and Wooster, O., branch.

Died:

HENRY F. WANNING, 89, director and member of the executive comittee of Farrel-Birmingham Co. Inc., Ansonia, Conn., and for 37 years president of the Birmingham Iron Foundry, in Shelton, Conn., April 28. The foundry company was established in 1836 and merged in 1927 with the Farrel Foundry & Machine Co. to form the Farrel-Birmingham Co. Inc. During its long life the Birmingham Iron Foundry built special machinery for many purposes —for making wire nails, axe polls, pickeyes, for rolling bayonets and gun barrels during the Civil war, rolling mils for steel, brass and the precious metals, heavy hydraulic presses and delicate machines for cutting the finest textiles. Mr. Wanning leaves six great grandchildren.

♦ ♦ ♦

James Farasey, 48, president of the J. D. Farasey Mfg. Co., Cleveland, builder of road machinery and heavy metal parts, in Cleveland, May 10. Since 1916 he had been president of the company founded by his father, who died at that time.

♦ ♦ ♦

George H. Kramer, 76, president and general manager of the Kramer Bros. Foundry, Dayton, O., in that city, recently.

♦ ♦ ♦

David B. Davies, head of the Davies-Goebig Mineral Supply Co., Chicago, broker in foundry sand and mineral supplies, in Chicago, May 14.

♦ ♦ ♦

Frank J. Mau, 57, vice president of the Mau-Sherwood Supply Co., Cleveland, dealer in mill supplies, in Cleveland, May 12.

♦ ♦ ♦

Frank C. Eaton, president of Pittsburgh Tool Steel Wire Co., Monaca, Pa., in Pittsburgh, May 9. Born in Camden, Me., he had lived in the Pittsburgh district for the past 42 years.

♦ ♦ ♦

Maurice Ingold Johnson, 59, vice president of the Gisholt Machine Co., turret lathe builder, Madison, Wis., May 13. He was the son of the late John A. Johnson, founder of the company, which he joined after attending West Point academy and being graduated from University of Wisconsin.

♦ ♦ ♦

Sidney K. Becker, 50, works manager of the Fairfield, Conn., plant of the United States Aluminum Co., in Bridgeport, Conn., May 14. He had been with the company over the past 25 years and at one time was eastern sales manager.

♦ ♦ ♦

G. E. Frank Gray, 79, formerly chief clerk in the Edgar Thomson works of Carnegie Steel Co., and employed wtih the company from 1881 until his retirement in 1921, in Pittsburgh, May 13.

♦ ♦ ♦

John A. Bettin, 44, designing engineer for the Los Angeles Steel Casting Co., in Los Angeles, May 5. Much of the machinery used by the metropolitan water district at Los Angeles was designed by him.

♦ ♦ ♦

Charles F. Loweth, 78, until his retirement May 1 chief engineer of the Chicago, Milwaukee, St. Paul & Pacific railroad, in Chicago, May 15. He was consulting engineer in St. Paul from 1883 to 1901, joining the Milwaukee road in the latter year as engineer and superintendent of bridges and buildings. He was made chief engineer in 1910.

♦ ♦ ♦

Herman A. Poppenhusen, 60, retired electrical engineer of Hammond, Ind., May 8. He was graduated from the Massachusetts Institute of Technology and with his brother, the late Albert Poppenhusen, founded the Green Engineering Co., Chicago, manufacturer of power plant equipment. He was vice president and general manager of the company until 1923, when it was sold to the International Combustion Engineering Co., and he retired.

Convention Calendar

May 19-23—National Electrical Manufacturers' association. Spring meeting at Homestead hotel, Hot Springs, Va. R. J. Blais, 155 East Forty-fourth street, New York, is secretary.

May 20-23—National Associaton of Purchasing Agents. Annual convention and exhibit at Waldorf-Astoria hotel, New York. George A. Renard, 11 Park Place, New York, is secretary.

May 22—Porcelain Enamel institute. Annual meeting at Statler hotel, Cleveland. Kurt R. Groener, 612 North Michigan avenue, Chicago, is executive secretary.

May 23—American Iron and Steel institute. Spring meeting at Hotel Commodore, New York. Walter S. Tower, 350 Fifth avenue, New York, is executive secretary.

May 24—American Society for Metals. Special sectional meeting of New York, Philadelphia, New Jersey and Lehigh Valley chapters at Hotel Pennsylvania, New York. T. N. Holden, 1219 Glenwood road, Brooklyn, N. Y., is secretary at New York.

June 6-7—Gray Iron Founders' society. Meeting at Hotel Gibson, Cincinnati. Henry M. Halsted Jr., Public Square building, Cleveland, is executive vice president.

June 10-13—American Electro-Platers' society. Annual meeting at Stratfield hotel, Bridgeport, Conn. E. Steen Thompson, 905 West Tenth street, Erie, Pa., is secretary.

June 24-28—American Society for Testing Materials. Thirty-eighth annual meeting at Book-Cadillac hotel, Detroit. C. L. Warwick, 260 Broad street, Philadelphia, is secretary.

Aug. 19-23—American Foundrymen's association. Thirty-ninth annual convention at Royal York hotel, Toronto, Ont. C. E. Hoyt, 222 West Adams street, Chicago is secretary.

Sept. 11-21—National Machine Tool Congress (Third). In Cleveland, under auspices of the National Machine Tool Builders' association; Machine Shop Practice division, American Society of Mechanical Engineers; and Production Activity division, Society of Automotive Engineers. Herman H. Lind, 1220 Guarantee-Title building, Cleveland, is general manager, National Machine Tool Builders' association.

Sept. 11-21—National Machine Tool Exposition (Third). In Public Auditorium, Cleveland, under auspices of the National Machine Tool Builders' association. Roberts Everett Associates, 225 West Thirty-fourth street, are managers.

Sept. 18-20—National Industrial Advertisers association. Annual convention in William Penn hotel, Pittsburgh. Allan E. Beach, Littleford Bros., 453 East Pearl street, Cincinnati, is secretary.

Sept. 24-26—Association of Iron and Steel Electrical Engineers. Annual convention and exposition in Pittsburgh. T. B. Little, Empire building, Pittsburgh, is acting managing director.

Sept. 30-Oct. 4—American Institute of Mining and Metallurgical Engineers. Fall meetings of Iron and Steel and Institute of Metals divisions in Chicago. John T. Breunich, 29 West Thirty-ninth street, New York, is assistant secretary.

Sept. 30-Oct. 4—American Society for Metals. Seventeenth annual National Metal congress at Palmer House, Chicago. W. H. Eisenman, 7016 Euclid avenue, Cleveland, is secretary.

Sept. 30-Oct. 4—American Welding society. Fall meeting in Chicago. M. M. Kelly, 33 West Thirty-ninth street, New York, is secretary.

Sept. 30-Oct. 4—National Metal exposition. Seventeenth annual, in International Amphitheater, Chicago. W. H. Eisenman, 7016 Euclid avenue, Cleveland, is general manager.

Financial

AMERICAN ROLLING MILL CO., Middletown, O., which last week reported net profit of $1,342,434 after charges for the first quarter, or more than double the showing of a year ago, has registered with the securities and exchange commission in Washington an issue of $25,000,000 ten-year convertible debentures.

Approximately $5,000,000 will be used for the construction of a wide cold sheet-strip reduction mill and miscellaneous equipment. The remainder of the issue will be divided as follows: $13,665,300 to redeem 5 per cent notes due Nov. 1, 1938, $3,659,250 to be advanced to the Sheffield Steel Corp., a wholly-owned subsidiary, for redemption of bonds; $1,625,000 to increase working capital.

EDITORIAL

Here Are Essentials for Sound National Recovery!

For this week's editorial, STEEL *presents in full the text of a resolution adopted unanimously by members of the Associated Business Papers Inc. at its recent meeting in Hot Springs, Va. The members of the association, as the publishers of 125 business papers serving the principal industries and trades, have unusual opportunities for studying at close range the attitude of American business executives toward current national problems.*

We believe the resolution reflects accurately the consensus of opinion among thinking industrial executives and that it states, in dispassionate terms, the broad principles which sooner or later must be recognized and adopted by the federal administration before sound national recovery can be assured.

THE EDITORS

AS CLOSE and continuous observers of American industry and trade, the business press is convinced that the well-being and prosperity of our people must depend, in the long run, upon the maintenance of constantly increasing efficiency of production and distribution. Only in this way can high standards of living for the American consumer be maintained.

To realize this objective it is essential that the development of new methods and processes for the manufacture of goods required by the consumer, together with the promotion of efficiency in distribution and merchandising, be stimulated in every legitimate way. The chief motivation of this development always has been, and we believe must continue to be, the incentive offered by the profit system. So long as the competent and the enterprising can anticipate rewards proportionate to the skill and energy expended, this progress, benefiting industry and the public alike, will continue.

Some Emergency Measures Are Inconsistent With Sound Principles Responsible for Progress

Therefore, any tendency on the part of government to interfere with this vital process we believe is against public interest. Under the stress of emergency many measures have been adopted for the control of industry and trade which seem to us to be inconsistent with the tested principles which have been responsible for national progress and the well-being of the individual citizen in every walk of life. Whatever merit these measures may have, as expedients designed solely to meet the exigencies of a national crisis, it is manifest that they cannot be continued indefinitely without crippling the industrial structure, dislocating and unbalancing the national economy, and reducing the opportunities of the individual business man, worker and consumer.

We urge, therefore, that government discontinue, at the earliest possible moment, all those temporary measures which have been found to interfere with the normal and healthy processes of American business, or which are not in keeping with traditional American policies of individual progress through competitive merit, or of progressively higher standards of living for the people as a whole through continued increases in productive efficiency.

Government Should Remove All Unnecessary Restrictions Against Individual Enterprise

At the same time we recognize the right and duty of government to adopt those measures which are necessary for the protection of legitimate business and all other citizens from the exploitation of predatory interests, whether those be in the ranks of industry, finance or labor. We recognize the necessity of protecting the public from natural monopoly or monopolistic practices affecting production, rates, prices and wages. Industries which are naturally competitive should not be allowed to engage in monopoly practices without government regulation. We therefore urge that, to whatever extent industry opposes government regimentation, it shall as a matter of consistency and sound economics accept the principle and carry out the practice of free competition in the public interest.

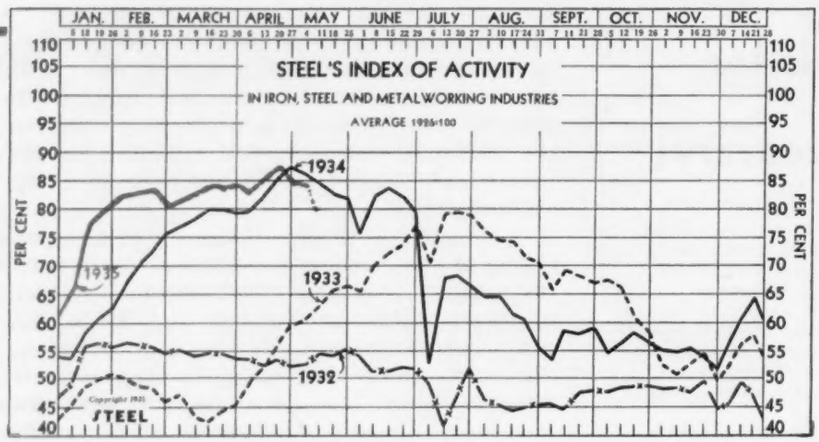
We are opposed to government operation of business enterprises and competition with its own citizens.

We are opposed to government ownership and operation of railways.

We believe the restriction of free enterprise and competition through a system of government licensing of processors, as proposed in amendments to the Agricultural Adjustment Act, to be inconsistent with the interests of agriculture, business and the public.

We urge the elimination at the earliest possible moment of all artificial brakes upon freedom of individual initiative and enterprise, because we believe that through them alone employment can be expanded, and normal incentives for business development and capital investment provided.

THE BUSINESS TREND



STEEL'S *index of activity in the iron, steel and metalworking industries declined 5.2 points to* 79.4 *in the week ending May* 11:

Week ending	1935	1934	1933	1932
Mar. 9	82.0	78.6	43.4	54.8
Mar. 16	84.0	79.9	42.7	54.4
Mar. 23	84.0	79.7	44.6	53.5
Mar. 30	84.3	79.3	45.2	53.4
April 6	83.4	79.6	49.1	52.6
April 13	85.4	82.2	52.6	53.4
April 20	26.3	85.0	55.8	52.3
April 27	84.9	87.5	59.5	52.5
May 4	84.6†	86.0	60.3	54.7
May 11	79.4*	84.4	62.5	54.3

†Revised. *Preliminary.

The index charted above is based upon freight car loadings, electric power output, automobile assemblies (estimated by Cram's Reports) and the steelworks operating rate (estimated by STEEL). *Average for* 1926 *equals* 100, *weighted as follows: Steel rate* 40, *and car loadings power output and auto assemblies each* 20.

Business Steady in Spite of Washington Blundering

AS LONG as highly-placed public officials in Washington persist in voicing approval of the dangerous ideas of inflation fanatics, business sentiment probably will pursue its present erratic course. The comedy of errors put on by the senate during the past 10 days is not conducive to the growth of national confidence.

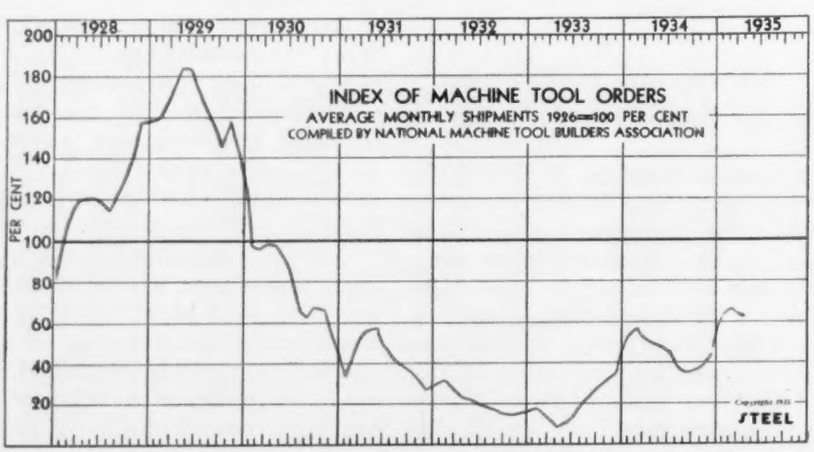
Fortunately business can safely discount a large part of the congressional tomfoolery on the ground that it is an attribute of political expediency. But there remains the disquieting reality that a powerful minority in Washington is determined to put over a program which, if successful even in part, would spell serious trouble.

Considering the character and the abundance of horrible examples of Washington blundering, business sentiment is holding up remarkably well. Much of the underlying strength in the present situation is traceable to the surprising stability of industrial activity in miscellaneous lines. The widely distributed flow of orders from small, unclassified business enterprises is contributing heavily to the stream of demand which is keeping the wheels of the nation's industrial machine turning at a fairly steady rate.

The auto strike has been terminated, but not before it had cut deeply into the weekly record of assemblies. The drop in auto output, due to the Toledo disturbance and to a small reduction in Ford production, was entirely responsible for a sharp recession in Steel's index of industrial activity for the week ending May 11. Power output, freight traffic and steel operations all gained in that week.

The trend of activity during the remainder of May will bear watching closely. It may furnish a clue to the outlook for the summer months.

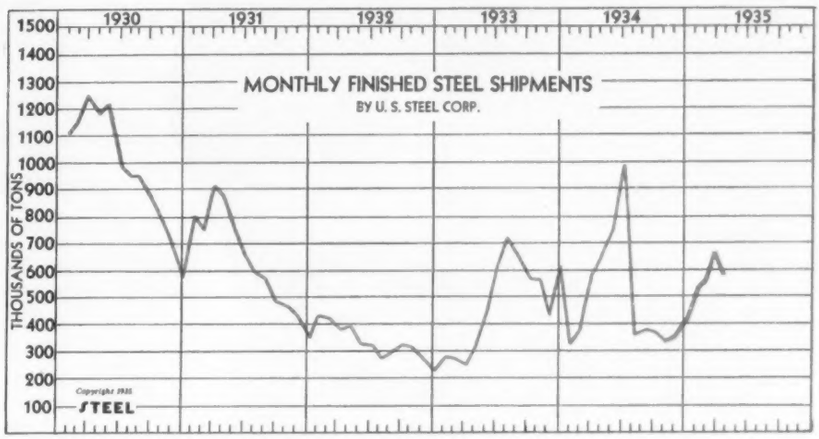
	1935	1934
Jan.	61.3	56.5
Feb.	61.5	58.2
March	60.3	50.9
April	60.3	48.5
May	.....	46.8
June	.....	42.6
July	.....	38.6
Aug.	.....	37.1
Sept.	.....	37.4
Oct.	.....	40.5
Nov.	.....	44.2
Dec.	.....	54.1


1928 1929 1930 1931 1932 1933 1934 1935
INDEX OF MACHINE TOOL ORDERS
AVERAGE MONTHLY SHIPMENTS 1926=100 PER CENT
COMPILED BY NATIONAL MACHINE TOOL BUILDERS ASSOCIATION
PER CENT
STEEL

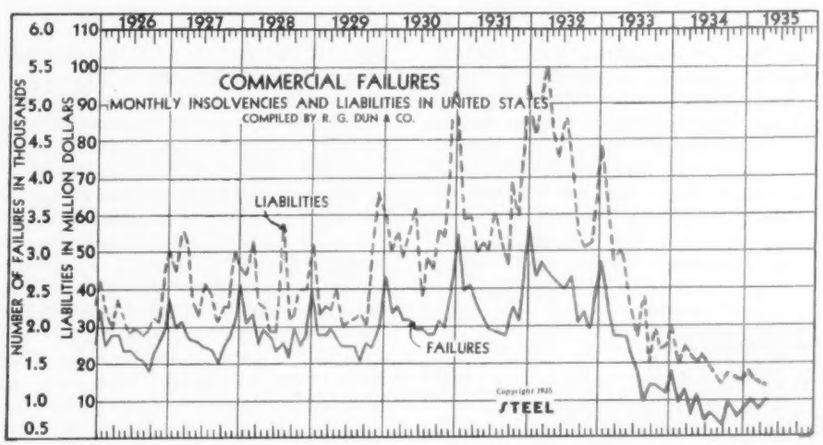
	1933	1932
Jan.	18.3	32.8
Feb.	15.2	30.4
March	11.1	23.9
April	8.3	20.6
May	10.6	20.8
June	15.5	21.7
July	22.4	18.7
Aug.	27.9	16.8
Sept.	30.9	15.3
Oct.	33.3	15.7
Nov.	38.0	16.4
Dec.	51.0	17.6

Finished Steel Shipments Decline in April

	Gross Tons		
	1935	1934	1933
Jan.	534,055	331,777	285,138
Feb.	583,137	385,500	275,929
March	668,056	588,209	256,793
April	591,728	643,009	335,321
May	.....	745,063	455,302
June	.....	985,337	603,937
July	.....	369,938	701,322
Aug.	.....	378,023	668,155
Sept.	.....	370,306	575,161
Oct.	.....	343,962	572,897
Nov.	.....	366,119	430,358
Dec.	.....	418,630	600,639



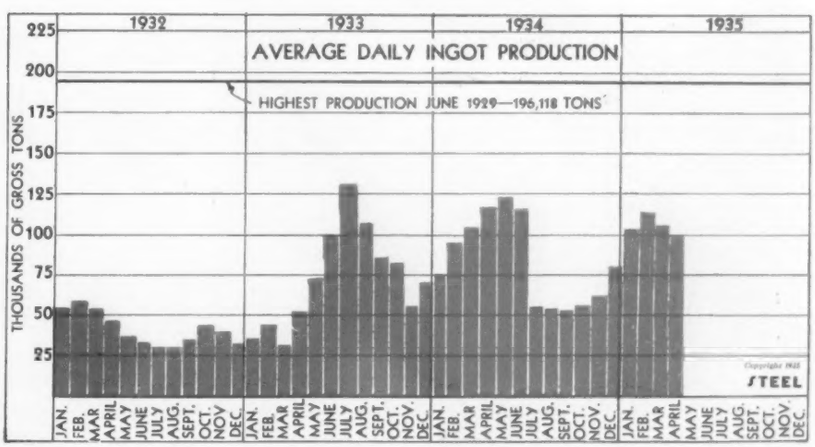
April Business Failures Point Upward; Liabilities Down



	Failures		Liabilities	
	1935	1934	1935	1934
Jan.	1,184	1,364	$18,823,697	$32,905,428
Feb.	1,005	1,049	18,737,657	19,444,718
Mar.	976	1,102	18,522,840	25,786,975
Apr.	1,115	1,052	18,063,923	25,786,975
May	.....	977	.....	22,560,835
June	.....	1,033	.....	23,868,293
July	.....	912	.....	19,325,517
Aug.	.....	929	.....	18,459,903
Sept.	.....	790	.....	16,440,147
Oct.	.....	1,091	.....	19,968,448
Nov.	.....	923	.....	18,349,791
Dec.	.....	963	.....	19,910,610

April Ingot Rate Shows Slight Loss

	Gross Tons		
	1935	1934	1933
Jan.	104,969	73,007	39,110
Feb.	114,255	90,965	44,709
March	108,873	102,275	33,268
April	100,243	115,912	53,817
May	.....	124,177	73,201
June	.....	116,006	98,632
July	.....	58,912	126,734
Aug.	.....	50,503	106,058
Sept.	.....	50,068	87,811
Oct.	.....	54,151	80,188
Nov.	.....	61,126	58,507
Dec.	.....	77,664	71,944



Production of Refrigerator Parts Is Speeded by Resistance Welding

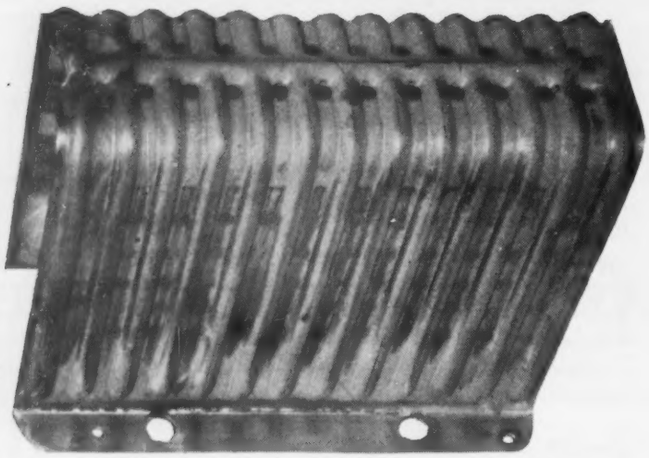


Fig. 5—A finished refrigerator evaporator. It is fabricated by spot and seam welding together two formed sheets of enameling stock

BY A. E. HACKETT

Detroit Representative, Thomson-Gibb Electric Welding Co.

Part II

(Part 1 of this article appeared in the May 6 issue of STEEL, *page* 34)

INCLUDED in the interesting operations of fabricating electric refrigerator assemblies in the plants of the Kelvinator Corp., Detroit and Grand Rapids, Mich., is that of welding the ball float which is approximately 4 inches in diameter and made of approximately 18-gage deep drawing or automobile body steel stock. The parts are stamped with a flange about 5/16-inch in width. Fig. 6 shows the two halves being welded in a dual fixture; one station is welding while the other station is being unloaded and two new halves are placed in position for welding. After the welding operation on one ball float is completed, the lever at the base of the fixture and immediately in front of the operator is pulled forward, unlocking the fixture and permitting it to rotate so that the reloading die will bring the part into position for welding.

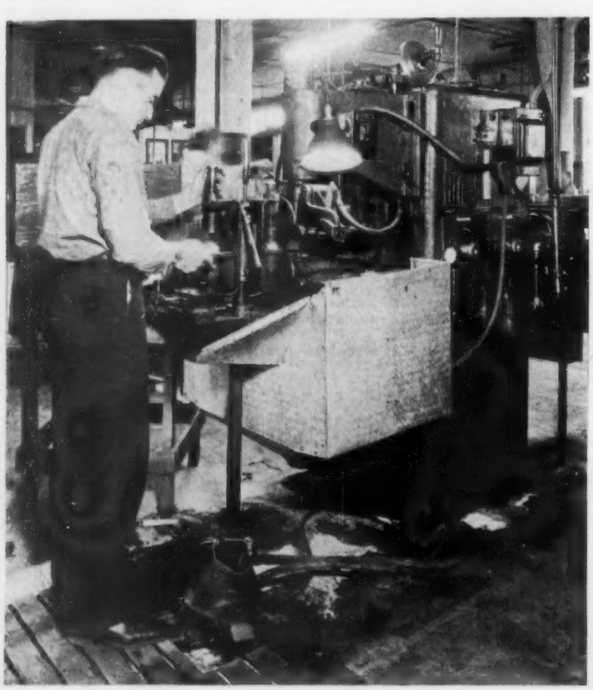


FIG. 6 — Two hemispherical steel stampings are seam welded together to make the ball float. The machine is equipped with a dual fixture; while a float is being welded in one side, the other side is unloaded and reloaded

After being welded, the flange is trimmed in a punch press directly through the weld itself, leaving a rib about ⅛-inch high all the way around, showing the completely welded condition of its entire circumference. Prior to the installation of resistance welding equipment, these parts were gas welded with many of the difficulties that followed the use of arc welding on the liquid receiver. The flange welded with the gas flame was rough and unsightly in appearance, and it seemed impossible to prevent annealing of the stock from ½ to ¾-inch on either side of the flange.

Production Speeded Up

In view of the fact that the Fire Underwriters Laboratory requires these parts to withstand an external pressure of 600 pounds per square inch, it was a serious condition when the gas flame made the material so soft that collapse frequently occurred at 450 pounds pressure. When these parts were gas welded, a vent was necessary in one of the halves to permit the escape of air expanded by the heat. This vent was closed later by brazing in another separate and distinct operation. Production of gas welded ball floats averaged about 33 pieces per hour for the flange alone,

the vent hole being closed much more rapidly. The percentage of leaks was not so great as with the arc welded receiver shell, but many pieces were returned for touching up minute leaks which were found in fairly large numbers.

Through installation of the Thomson-Gibb seam welder with 60-kilovolt-ampere transformer and use of the double fixture, an average production of 230 pieces per hour has been maintained. With this system of welding, it is possible by flood cooling the work to so concentrate the heat that the stamping is only slightly discolored on either side of the flange and the metal is not softened. This condition is plainly shown in Fig. 7, which shows a ball float being tested under vacuum. While the gas welded part frequently collapsed under an external pressure of 450 pounds, the electric welded float has easily withstood pressures up to 1200 pounds without indication of failure.

FIG. 7 — Ball floats are tested by submerging them in a glass receptacle to which almost complete vacuum is applied. If bubbles emerge from the welded seam, leaks are indicated. Note that the float is only slightly discolored by the welding operation

Trimmed After Welding

It is apparent that the new method has increased production seven-fold without giving consideration to the operation of closing the vent hole required when the floats were gas welded, or the elimination of repairs to leaky floats. The parts require no special preparation before the seam welding operation is performed, and all that is necessary afterwards is to trim the flange on a punch press. The ball is forced straight through the die and knives cut the flange in two; after the surplus metal is sheared off, the ball and scrap drop into separate receptacles.

Fig. 7 indicates the manner in which these ball floats are tested. After the float is attached to the arm which is shown at the top of the ball and to the right of it, the operator places a cap over the receptacle and throws the valve on which her right hand is resting. The gage indicates the amount of vacuum applied and the glass cylinder enables the operator to detect leaks. The gage registers just short of 30—indicating that almost complete vacuum is being maintained.

In a recent test run of 1000 of these floats, only one was found to leak and that was most minute. A careful examination indicated that the unit had not quite made a complete revolution in the welding machine; it had stopped just short of the complete circle. Frequently many days elapse without finding a single defective float. Since flanges are trimmed before the floats are tested, it is not possible to reweld the units as is done with the liquid receiver; furthermore, so few defects are found it is cheaper to discard the units than to repair them.

Product Is Improved

Electric welding in this particular instance has proved to be most successful not only from the standpoint of greatly increased production but the standpoint of an improved article

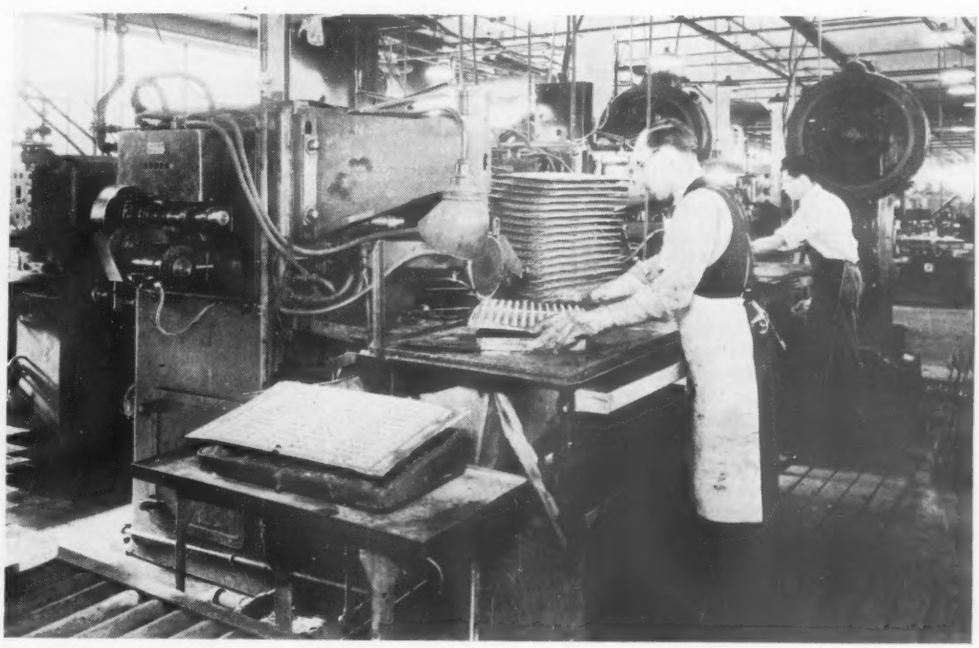


FIG. 8—Evaporators are seam welded around their periphery as shown here. The unit is placed in a metal frame which facilitates turning the assembly 90 degrees when a corner is reached. After being welded, the evaporator is placed on the table at the left where it is dried and moisture accumulation on the inside is removed

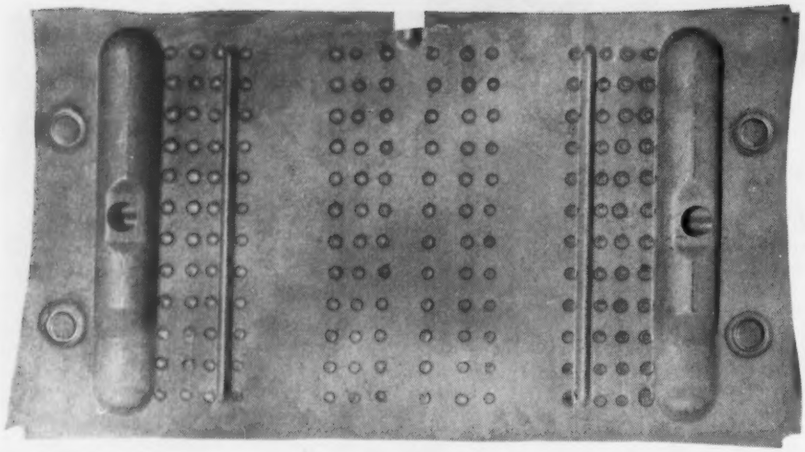


Fig. 9—The first step in evaporator assembly is matching two formed sheets of 16-gage steel and spot welding them together at the four corners. The next step is to make seven ring projection welds, four on the left-hand side edge and three on the right-hand edge; only four of these welds are shown

and materially improved appearance.

Probably the most interesting welding job is that of the evaporator, shown in Figs. 5, 9, 10 and 11. The various stages of evaporator development from two flat sheets of 16-gage enameling iron stock are a series of fascinating steps. After the two sheets are formed to shape, they are held in a jig and spot welded on each corner to insure accurate location while subsequent welding operations are performed. Figs. 9 and 10 show both sides of this first assembly. The next step, after the four spots welds are completed, is to make "ring" projection welds at seven points, four on the left-hand edge and three on the right-hand edge. Only four of these welds are shown. The metal in the centers of these welds is punched out later for the supporting bolts which hold the evaporator in the upper part of the refrigerator freezing chamber.

Make Ring Projection Welds

It is necessary that these ring projection welds be just as tight and hold the same pressure as does the seam weld which runs entirely around the outer edge of the assembly. That the ring projection meets this requirement is demonstrated by the fact that the seam weld *A* in Fig. 10 has for some time past been omitted, thereby saving a considerable amount of welding. The ring projection welding is being done on a Thomson-Gibb electric welding press using a 400-kilovolt-ampere transformer. Current remains on the work approximately 3/5 second. The projection is 1 inch diameter on centers and is about 1/16-inch in height. Seven of these welds are made in each unit and production averages 100 pieces per hour.

After the ring projection welds are made, the part goes by a conveyor to an air-operated spot welder where 14 rows of 12 spot welds are made to securely fasten the pieces together over much of their surface. These welds are placed between the flutes on one side, and the shelf groove on the other, and along the side of the header to which the flutes on the opposite side extend. This welding is done one spot at a time. One operator welds approximately 50 pieces per hour. From the spot welder the parts go to Thomson-Gibb series seam welders where the seam weld around the periphery of the assembly, Fig. 10, completes the welding operations. While the length of the assemblies at this point may vary, widths are always the same.

In connection with Figs. 9 and 10, it is interesting to note that the sheets are notched out in the center of the top edge so that the welding wheel would not have to be cut away in order to weld close to the radius of the formed tubular flute. By this arrangement, it is possible to use full-circle rolls in the seam welder.

Fig. 8 shows the manner in which seam welding is done. The table in front of the operator supports the metal frame in which the work is placed. A pin in the table keeps the work gage in place and when a corner is reached evaporator and frame are swung 96 degrees and the work feeds along until the next corner is reached. After being welded, the assembly is placed on the table at the left where the interior is thoroughly dried and any moisture that might have accumulated on the inside is removed.

From this point, numerous operations are performed, one of them being trimming. An assembly which has been trimmed is shown in Fig. 11. It is to be noted that the trimming operation has cut the stock directly through the welded area, leaving the edges absolutely tight and free from pockets which would mar the porcelain enameling which is the final operation. This illustration also shows the centers punched from the seven ring projection welds previously mentioned. Fig. 5 shows the evaporator in its finished shape, the numerous welds still being visible.

Multiplicity of Welds

All told, each evaporator requires approximately 940 welds. This figure includes the 4 spot welds which hold the two formed sheets together when first assembled; 168 spot welds making up the 14 rows of 12 spots each; the 7 ring projection welds; and 760 welds (10 welds per inch) in the 76 inches of seam welding.

Former practice was to gas weld

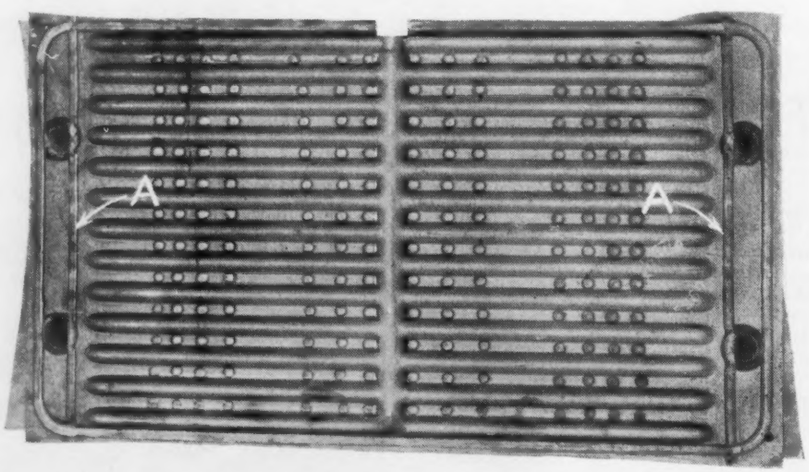


Fig. 10—This is the other side of the assembly shown in Fig. 10, after a seam weld has been made around the periphery. Present practice is to eliminate weld A. Note the notch in the top edge where the flute has a tubular shape. This eliminates the necessity of using a cut-away welding wheel to weld close to the radius of the flute

the edges of these evaporators, which, however, were not flanged for supporting bolts to hold them into position. Average production with gas welding was about seven evaporators per hour, depending upon size of the units. The same difficulties were encountered in gas welding evaporators as were encountered with the liquid receivers and ball floats described previously. The process was not only slow but costly in material and labor and much cleaning was required to remove scale. The same annealing effect as mentioned before occurred and leaky evaporators, which required repair, were not at all uncommon. Considerable skill on the part of the operator was required to make satisfactory repairs, and this added cost.

Adoption of electric seam welding improved conditions immediately. Scaling has been eliminated entirely; a stream of water playing on the welding rolls and flooding the work keeps parts sufficiently cooled that scale can not form. Heat being confined to a small area prevents also any tendency toward annealing the steel and thus reducing its strength. No particular skill on the part of the operator is required further than to load and unload the work and turning the gage at the corners. The human element, therefore, has been reduced to a minimum, and production has not been curtailed for lack of experience in the operation. Under the new method, average production is 40 per hour. The cost of electric current is only a fraction of that of acetylene gas even with the greater number of parts being produced.

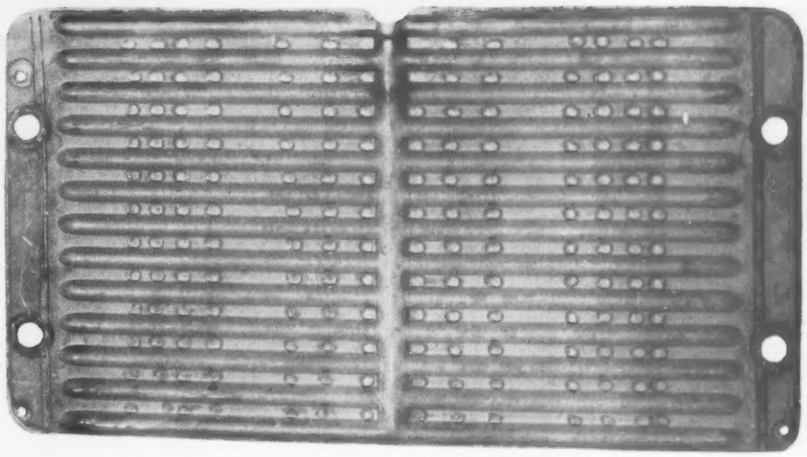


Fig. 11.—Here is shown the assembly of Fig. 10 trimmed to finished size and having the centers of the ring welds punched out. Trimming through the welded area leaves the edges absolutely tight and free from pockets which would prove troublesome in porcelain enameling, which is the final operation after the evaporator is formed to shape as shown in Fig. 5

Structural Sections in Levers of Truck Scales Improve Weighbeam Action

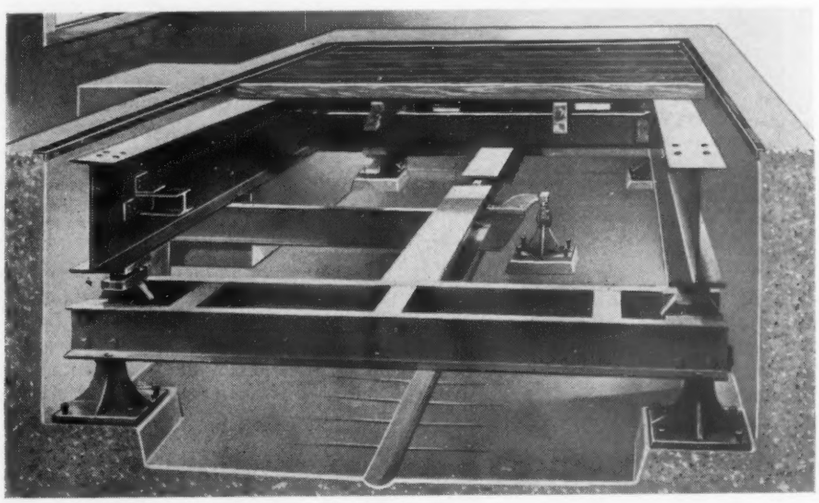
IMPORTANT advantages are claimed for the use of structural steel sections for the levers of motor truck scales. Combining strength with lightness, the resulting weighbeam action is quick and sensitive; the deadload carried by the knife edges and bearings is reduced, giving longer life; ample clearances are provided, making the surfaces easily available for inspection and painting; while mnufacturing practice is more flexible than when castings are employed, particularly in fabricating scales of special design.

Motor truck scale specifications issued by the American Railway Engineering association in 1921 require that the unit be designed to sustain 100 per cent of its nominal capacity on either end of the platform and as high as 75 per cent of its capacity on any corner without loss of accuracy. It also must resist horizontal forces of indeterminate amounts which in ordinary practice are equivalent to bringing a capacity load moving at 10 miles an hour to rest in 2 or 3 feet.

While stress limits were set up for different materials commonly used in scales at the time the specifications were issued, these products involved principally cast iron for the lever system, high-carbon and special alloy steel for knife edges and bearings and structural shapes for the bridge. Use of structural steel for the levers is a development of more recent date.

The scale illustrated is a product of the Gaston Scale Co., Beloit, Wis. Ship channels and broad flange beams are used for the lever frames, with I-beam struts spaced in the frames and welded in place. Hubs carrying the knife edges have machined faces which are bolted to the ends of the frames and the nuts tack welded. All lever sections are normal to the plane of the knife edges and the levers can be checked for level on any horizontal surface.

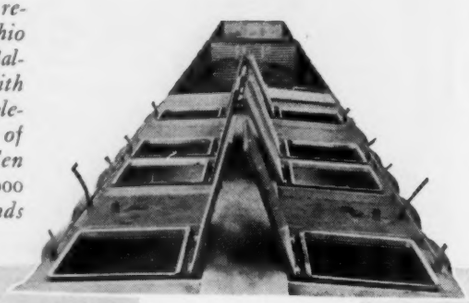
Knife edges consist of a main section of cold-rolled steel and a ¼-inch square working edge of high-carbon steel which is welded into a V-groove. The working edge is heat treated after being welded in place. Use of low-carbon steel for the supporting member of the working edge provides a cushion which absorbs shock loads and prevents excessive warping after the heat treatment. The pieces then are ground and set in machined ways.



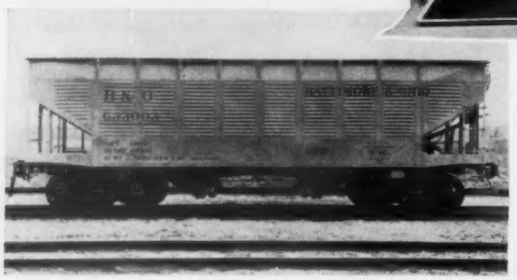
Ship channels and broad flange beams are used for lever frames of this motor truck scale, with I-beam struts spaced in the frames and welded in place

Low-Alloy Steels Used in New B. & O. Cars

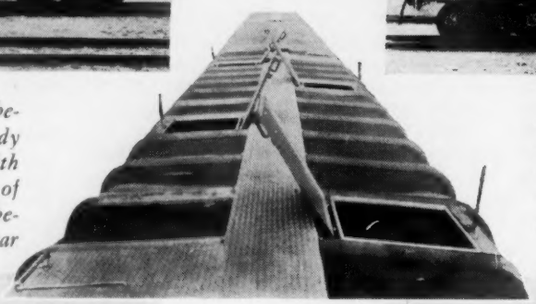
On this page are shown several of the 13 new experimental freight cars recently built by the Baltimore & Ohio railroad at its Mount Clare shops, Baltimore. Below is a hopper car with body of Republic Steel Corp.'s Double-Strength steel and underframe of United States Steel Corp.'s Man-Ten steel. Nominal capacity is 100,000 pounds, revenue load 136,000 pounds



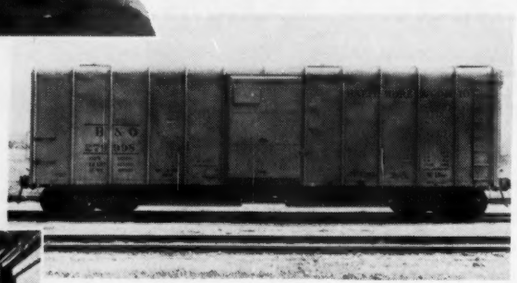
Below is a cement car with covered wagon type body of Alan Wood Steel Co.'s 70-90 steel with self-clearing hoppers. Underframe is of Man-Ten steel. Nominal capacity is 100,000 pounds, revenue 134,000 pounds. At the left is a view of the top of this car for cement lading, showing roof doors open. This arrangement has also been adapted to some box cars

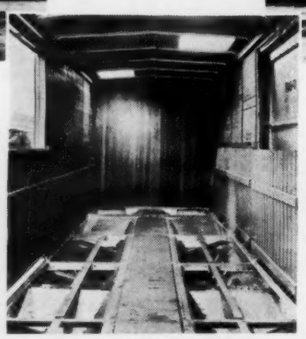


A new type of box car is shown below, with covered wagon type body of Cor-Ten steel sheathed with Masonite lining; underframe is of Man-Ten steel. At the center, below, is the interior of this type car



Box car below is covered wagon type having steel sheathed wood lined body with center hopper bottoms discharging inside of tracks, end hoppers and roof doors. At left is top of covered wagon box car





SUBSTANTIALLY higher ratios of pay load to tare weight, and longer life because of enhanced corrosion-resisting properties, are two important features of thirteen new experimental freight cars built by the Baltimore & Ohio. Extensive use has been made of several low-alloy high-strength steels, supplied by a number of steelmakers.

Extent to which the new metals are used may be indicated by the body construction, comprising variously Cor-Ten, "A-W" 70-90 steel, Plykrome, rustless iron, Double-Strength steel and aluminum alloy. Some of the box car bodies are steel sheathed and lined with wood, while one has Masonite lining. Several of the same alloys and Man-Ten steel are used in the underframes, as well as in the sills of two of the cars.

All the cars are equipped with "AB" air brakes, high powered hand brakes and safety couplers. Twelve of them have articulated lateral motion truck journals, antifriction self-centering side bearings and bolster spring stabilizers. Eleven have brake slack adjusters and cushion underframes. Box cars have corrugated metal running boards, and other improvements on various cars include high capacity friction draft gear, side door rear edge locks and ball bearing rollers, and bell crank truck levers.

An interesting design innovation is embodied in the covered wagon top box cars in which the side and roof sheets are integral, with graceful curve construction where the roof and sides meet, bringing about increased cubical contents, greater strength and appreciably lower construction cost.

In the actual building of a car of this type from a steel underframe, wood-body box car that had been shopped for a new body, improvements were made in 22 respects including a reduced cost of over $100 as compared with the rebuilding of the wooden body, reduced tare weight with increased capacity, and an increase in the revenue carrying capacity from 92,600 to 126,000 pounds, or 36.4 per ent.

—Richard Garrison

Baldachin or canopy for the main altar of the Queen of the Miraculous medal chapel, St. Joseph's college, Princeton, N. J., a fine example of present-day finesse in fabrication of ornamental wrought iron

Sons of the "Village Smithy"

Modern Craftsmen in Hand Wrought Metals Carry On the Traditions of Early Artisans

BY B. K. PRICE
Associate Editor, STEEL

AT THE spick and span blacksmith shop of Kenneth Lynch Inc., Long Island City, N. Y., members of the exclusive Armor and Arms club gathered recently to see the forging of a sixteenth century rapier. The process, Mr. Lynch explained, was in no sense a lost art, but rather one which had been handed down with the utmost fidelity through generations of master craftsmen abroad, where he, an American-born, had spent several years in the study of it and other phases of metal craft.

From the beginning it was obvious that the forging of the blade was a process in which the eye, ear and sense of feel were the guiding factors. Yet the work proceeded in an unfaltering and business-like manner—the heating, the hiss of hot metal in water, and the din of the hammer on blade and anvil, with each swing a body swing, even to the lightest taps (such being the technique of a true blacksmith). And then the many repetitions of this performance, with the blade gradually taking shape, and finally reaching the proper degree of temper.

First it would be placed in the fire for 5 or 6 minutes, with the temperature at 1400 to 1500 degrees Fahr. Then, when the metal took on the right color—a light cherry red—it would be placed on the anvil for four or five minutes of intensive hammering. Always, in this process, when the blacksmith was not hammering the blade, he was tapping the anvil, so as not to lose the rhythm, a practice handed down through generations of blacksmiths.

This general routine, in fact, was kept up for the greater part of six hours, and while the temperature of the forge was always much the same, the length of time the steel remained in the fire and the time the blade was hammered became shorter toward the end, as shaping gave way to tempering. The tempering was judged by the hardness of the steel, by the springiness of the blade, and sometimes by the use of a file.

The metal used for the forging of the blade was a bar of Braeburn water-hardened steel, about ⅝ by ⅞ inches, supplied by Peter A. Frasse & Co., New York. It was formed into a diamond-shaped blade about 5/16-inch at the thickest point, where the hilt was to go, and tapered to a fine point, about 40 inches in length.

A swept hilt, of intricate pattern,

TECHNIQUE of a century ago is revived and adapted to present needs for ornamental metal. Here the blacksmith is heating a piece of twisted wrought iron for a decorative railing

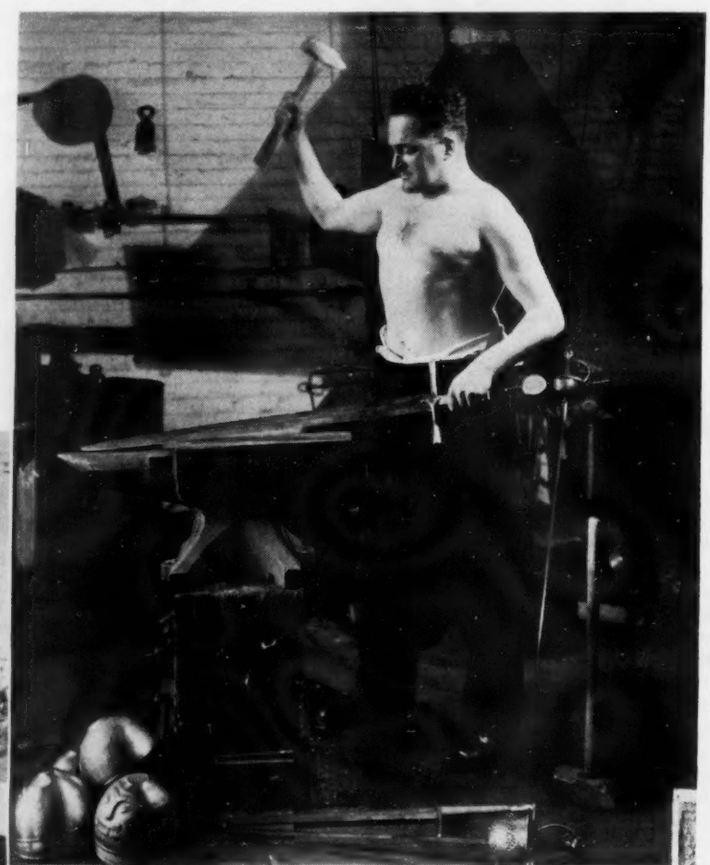
was made of one piece of soft steel, split down hot with a cold chisel and then forged and hammered out into the filaments of the design. The final touches were hammered out on a piece of smooth steel, held tightly in a vise, so that the underside, next to the hand, would remain smooth; and where the ends joined they were fire-welded at a high temperature. All-in-all the forming of the hilt was one of the most difficult parts of the job, with great care exercised at all times to keep the metal from burning, or getting too hot.

The hilt was shrunk onto the blade hot, and quenched when finally in proper position. Meanwhile, the handle and the pommel, the latter a knob for the top of the grip, were being fashioned. The handle, when finished, had a mahogany core, bound with twisted steel and copper wires of light gage. The knob was made out of one block of steel and engraved with a pattern of wild roses. These parts were then assembled to the blade, with the handle being slipped over the tank and the pommel twisted on at the top.

The fashioning of armor not only has long been a hobby for Mr. Lynch, but also an increasingly profitable business. Recently he has been charged by several museums and private collectors of armor to make reproductions of their finest pieces, and he has turned out much work for motion picture producers. Specimens of his handicraft are shown in an accompanying illustration.

However, he is perhaps best know for his architectural work. He has turned out commissions for wrought iron railings, gates, and grilles for many fine homes, including the Baker residence in Washington, and the Dodge Dillman residence in Detroit. His contributions to ecclesiastical art include the wrought iron babtistry grille for St. Patrick's cathedral, New York, and, only recently, the baldachin, or canopy, for the main altar of the Queen of Miraculous medal chapel, St. Joseph's college, Princeton, N. J.

The latter, as noted in STEEL, March 4, p. 41, weighs about 25 tons, and is supported by four columns, each of several sections, forged and twisted. Under the canopy are eight panels, depicting events in the life of Christ.



HAMMERING out the blade of a modern reproduction of an ancient battle sword is shown at the right. Below is a view from the balcony of the blacksmith shop where 35 craftsmen are busied with a variety of work in wrought metal fabrication

TIN PLATE

YOUNGSTOWN

YOUNGSTOWN COKE TIN PLATE has been known for many years as a standard of high quality -- Produced with the greatest care from steel made in our plants -- YOUNGSTOWN "COKES" have achieved wide acceptance for a great many Tin Plate uses.

YOUNGSTOWN

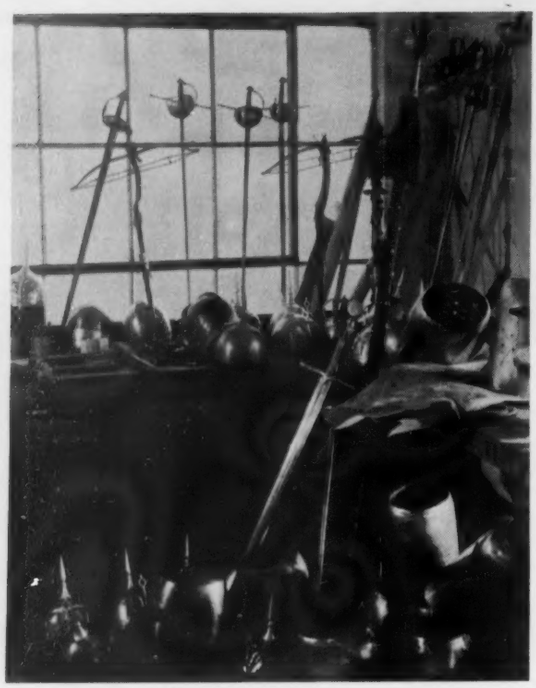
YOUNGSTOWN PLIADUC TIN PLATE--a normalized product--has merited the distinction of being preferred for a number of exacting requirements. The unique fabricating properties of PLIADUC have won for it a definite high standard in the Tin Plate Industry.

YOUNGSTOWN

YOUNGSTOWN COLD REDUCED TIN PLATE -- made on our modern four-high Cold Reduction Mill--has proved to be a superior product for many diversified applications but is best known for its remarkable drawing properties. For work requiring severe forming or deep drawing -- specify YOUNGSTOWN COLD REDUCED.

THE YOUNGSTOWN SHEET AND TUBE COMPANY

GENERAL OFFICES - - YOUNGSTOWN, OHIO



COLLECTION of swords and armor at the workbench of Kenneth Lynch, owner of the specialty shop

These panels are in repousse, with the thin sheets of metal, rolled from hand-puddled iron, delicately hammered out against a pliable composition of pitch and cement. In this operation, the background was hammered out, leaving the design in relief. The work then was given a hot oil finish.

The forging of the sixteenth century rapier afforded guests an opportunity to inspect what is perhaps one of the most unusual shops of its kind in the country. Of white stucco exterior finish, the shop contains several novel features, including a private museum of ancient armor, a study in which is said to be one of the finest collections of books on wrought iron, and a classroom for apprentices.

Up-to-Date Shop Provided

The workshop proper, a section of which is shown herewith, is two stories high, with large skylights and glass wall panels to provide a maximum of light in the daytime and with the interior all finished in white. The ground floor is devoted entirely to iron work. Here, the blacksmiths and fine finishers operate forges, hammers and rollers. However, all the actual work of fashioning and tempering the iron is done by hand—and when a job finally comes off the fire it is a finished piece.

The second floor is comprised of a wide balcony, open on three sides and devoted entirely to work in bronze, silver and gold. The equipment here includes polishing machines and annealing furnaces, which the smiths do not use in the working of iron, incidentally. Drafting room, chemical laboratory and shower rooms complete the main appointments of the shop, which is air-conditioned throughout.

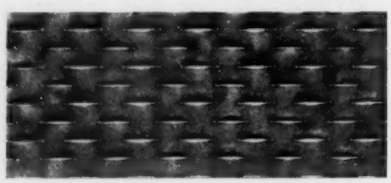
Mr. Lynch has with him 35 craftsmen and associates, and plans to develop his apprenticeship school further.

"It is a golden opportunity," he said, "there is no competition. I have never yet seen a smith fail to make a living."

His plan of apprenticeship calls for a four-year course; and when an apprentice has completed it, he added, an apprentice may well feel assured he is a master craftsman.

New Sound Screens Of Steel Sheets

STEEL sound screens have been developed by the Beckley Perforating Co., Garwood, N. J., for use in motion picture theatres in place of the fabric sound screens hitherto standard equipment. The fabric screens are perforated with round holes, resulting in an average loss of 18 per cent of the picture, with a tendency toward fuzziness. The new steel screens are provided with small louver perforations, as shown in the accompanying illustration, so that there is no loss of picture. With this type of perforation it is possible to install the sound reproducing apparatus directly behind the screen. Tests show that sound reproduction throughout the screen represents a new standard for sound pictures.



Perforated steel sound screens for motion picture theatres give superior reflected light, with no loss of picture, and set new standard for sound reproduction

New Market for Sheets

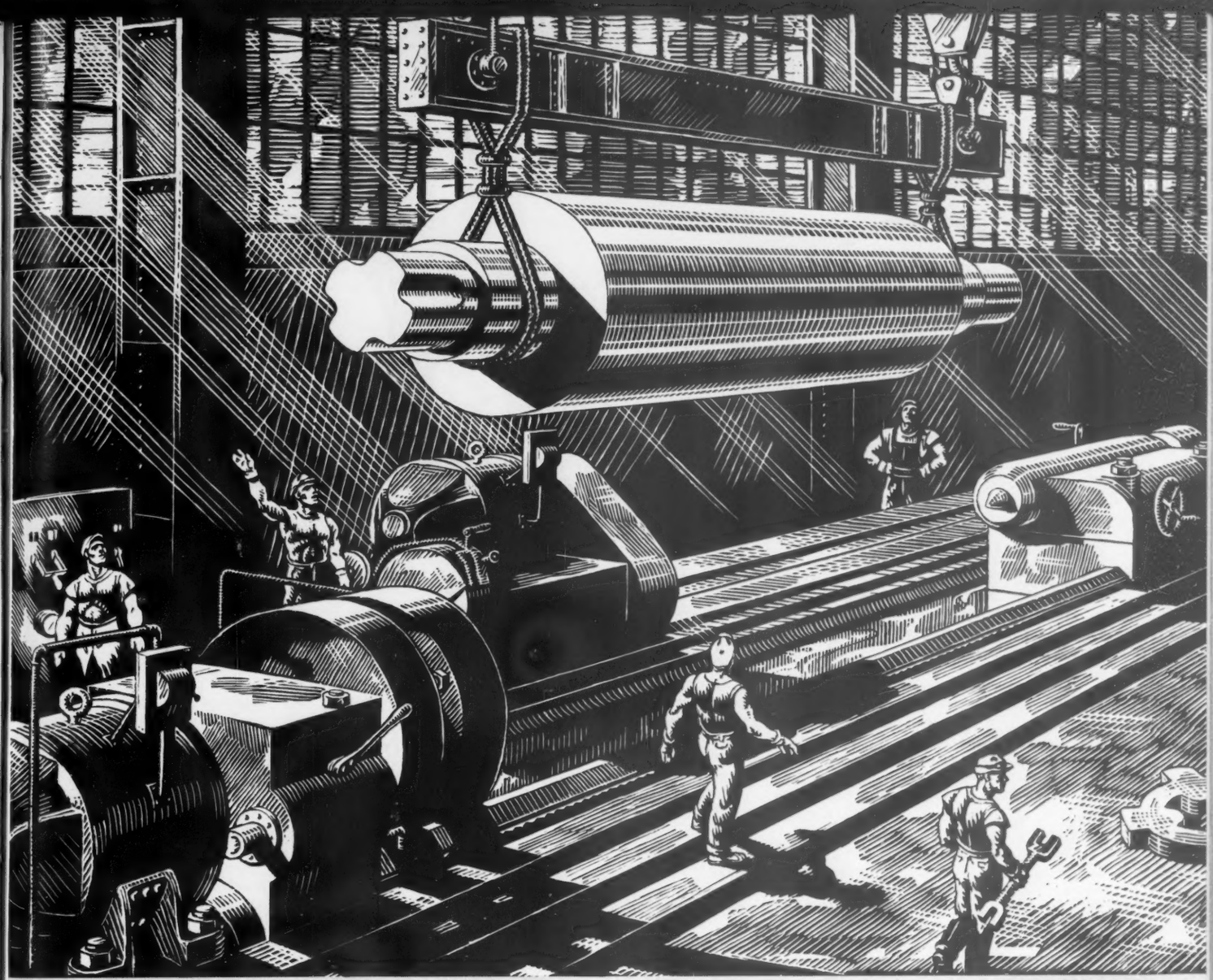
Made from No. 30 gage, 36 x 144-inch, hot rolled steel sheets, the average size of the screens when made up is 18 feet high and 24 feet long. They are made in 36 x 144-inch panels, with spot welded steel angle frames and the perforated sheets spot welded to frames. The finished panels are assembled at the theatre with a series of bolts and special clamps fastened to the rear of the steel angle frames. Average weight of the finished screen is about 2 pounds per square foot.

The new steel screen gives an unusually satisfactory reflected light. This is due to the superior finish that can be applied to steel. The finish is obtained by applying special lacquer with a spray gun, four different lacquers being used for four coats. It is found that surfaces so finished are easily cleaned, and durable. One of these screens, installed as regular deck equipment on the battleship LOUISVILLE, and exposed to all kinds of sea weather for many months, shows the same brilliant and clear picture as when the equipment was new.

The new screens are known as Metaltone sound screens and are sold by the Raven Screen Co., 143 East Twenty-fourth street, New York. Further details may be obtained by addressing this company.

Broad Strip Mills Require Large Tonnage of Bronze

Approximately 85 tons of bronze is used for the screwdown assemblies on the various roll stands and for other miscellaneous parts of the 4-high continuous broad strip mill built by the United Engineering & Foundry Co., Pittsburgh, for the Ford Motor Co., Dearborn, Mich. The alloy with a tensile strength in excess of 100,000 pounds per square inch which is obtained without heat treating, was supplied by the Cramp Brass & Iron Foundries Co., Philadelphia. This type metal also is being employed in the construction of the broad strip mill of the Carnegie Steel Co., McDonald, O.



MODERN ROLL TECHNIQUE

The subject of rolls embraces hundreds of variations in size, characteristics and metallurgical analyses. Quality and economy in the production of rolled products depends to a large extent upon the rolls which are used.

Pittsburgh Rolls Corporation manufactures rolls exclusively: It makes rolls for every rolling operation: It developes new and better rolls to meet changing trade conditions which require better rolled products. Only intensive specialization can give satisfactory, up-to-date roll service.

PHOENIX ROLLS

PHOENIX STEEL, for unusual strength; PHOENIX "A" (steel alloy), for strength and wear; PHOENIX METAL—PHOENIX "K", for strength, wear and finish; PHOENIXLOY (uniformly hard), for flat rolling where high finish of extremely thin gauge of material is required to be free from all marks or defects. Also tube mill rolls of quality material best suited to the kind of service required; PHOENIX CHILL; PHOENIX NICKEL CHILL, for all flat rolling requiring finish.

PITTSBURGH ROLLS CORPORATION

PITTSBURGH, PA.

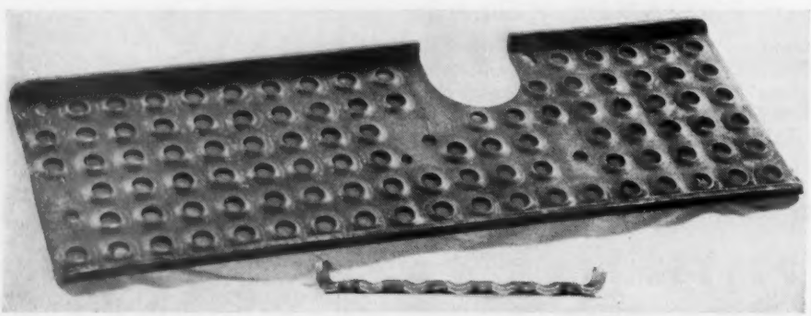
METHODS AND MATERIALS

Steel Brake Step Replaces Wood

A NEW steel brake step, for replacing wood brake steps on box and hopper cars, has been developed and placed in production by the Parish Pressed Steel Co., Reading, Pa. Several thousand of these steel steps already have been supplied to the Reading and Lehigh Valley railroads.

Shown in the accompanying illustration, the step is 30 inches long and 10 inches wide and weighs 19 pounds. It is formed of ¼-inch steel plate, perforated with ¾-inch holes on 1½-inch centers, and provided with front and back flanges, ⅞ and 1-inch wide, respectively. The holes have embossed edges and the steps are placed with the flanges pointing upward, thus providing a firm foothold for the brakeman. Another value of the embossed edges of the holes in reducing the hazards confronting brakemen is that no heavy coatings of ice can form on these edges in cold weather.

In the fabrication of these steps, the first operation is blanking them with round corners and with a cutout to fit around the brake mast. The entire shape is blanked out in a double crank press equipped with air cushions which eject the blank from the dies. In the second operation the blank is perforated with six bolt holes for bolting the step to the step brackets on the car. Next comes the forming of the flanges. The last operation is the punching and embossing of the holes whose edges form a nonskid tread. Punching and embossing are done at one stroke in an ordinary punch press equipped with a multiple die.



Several thousand of these new brake steps have been furnished to leading railroads for installation on box cars. They are formed of ¼-inch steel plate and are perforated and formed to provide a safe foothold

$ $ $

Modern Woman Uses Little Steel in Her Attire

Milady is consuming more steel in the modern home, but less in personal adornment. No one realizes this better than the wire mill salesman who used to sell the corset trade hundreds of tons of the highest grade material. The millinery trade in the days of the picture hat and miniature flowerbed models also consumed tons for frames. A large part of this tonnage is gone.

But a new development in the millinery trade has not entirely ruled out steel in the form of wire. The Dennison Mfg. Co., Framingham, Mass., has sponsored the vogue for crocheted crepe paper hats in 14 models, one of which, the "Sailor," requires a couple of ounces of milliners' wire for the brim. And in making the hats of Dennison crepe, a No. 3 steel crochet hook is required for all models.

$ $ $

Machines in Assembly Line Are Moved by Tractor

An ingenious and economical method is used by a Cleveland machine tool manufacturer in moving machines from one station to another on its assembly floor. A gasoline engine-driven tractor is equipped with a ram which serves as a "pusher" to move the machines along the floor. The pusher is covered with a soft pad so that the machines will not be scratched. The floor is of wood blocks, laid smoothly so that there are no obstructions. The tractor is provided with a rubber tread which grips the wood block floor effectively.

Wanted: Information on Large Swaged Nipples

"We are looking for information covering the manufacture of swaged nipples in sizes up to 20-inches diameter and wall thickness up to 1-inch," writes one of STEEL'S subscribers.

$ $ $

Columbium Now Is Used for Stabilizing Stainless Steel

Columbium now is being used commercially for the purpose of stabilizing stainless steel of the austenitic chromium-nickel type and rendering it immune to intergranular

corrosion. Stainless steel containing columbium in proportions of about 10 times the amount of the carbon content shows no intergranular corrosion even when exposed concurrently to elevated temperatures and chemical corrosion. It may be welded and, without subsequent annealing, placed in service even at temperatures ranging between 1000 and 1500 degrees Fahr. Columbium (see STEEL of April 1, page 79) is available in the form of ferro-columbium which now is being produced commercially by the Electro Metallurgical Co., 30 East Forty-second street, New York. It contains 50 to 55 per cent columbium.

For welding chromium-nickel stainless steel stabilized with columbium or titanium, Linde Air Products Co., 30 East Forty-second street, New York, has developed columbium-bearing stainless steel welding rods. Their columbium content is high enough to make them satisfactory for welds which are to be subjected to corrosion conditions at high temperatures. The rods are furnished coated for electric arc welding or uncoated for gas welding.

Winners in Bridge Design Contest

JEROME RAPHAEL, student at Massachusetts Institute of Technology, Cambridge, Mass., won first prize in the seventh annual bridge design competition held by the American Institute of Steel Construction.

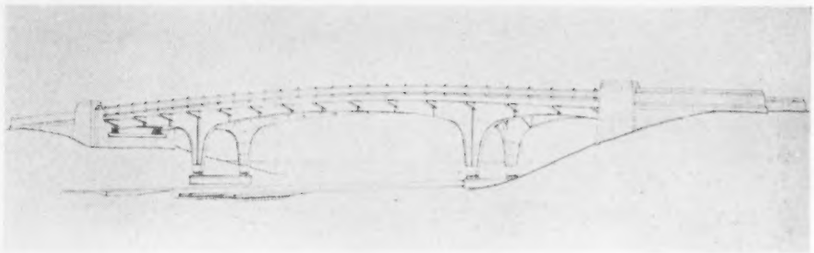
Alexander Matthews Jr., student at the Yale School of Engineering, New Haven, Conn., won second prize.

First honorable mention was given to David Hiat of New York university, New York.

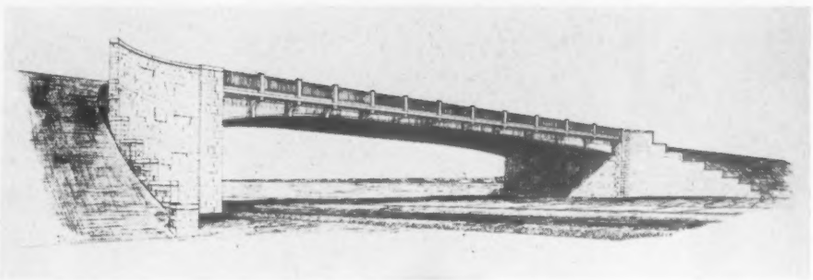
Second honorable mention was awarded to Fred A. Thompson Jr. of Iowa State college, Ames, Iowa.

The problem was to design a steel grade crossing elimination bridge carrying a highway over a railroad and another highway parallel to the railroad. In addition to giving the students certificates of award, the first prize carries a cash compensation of $100 and the second prize $50. Main span perspectives of the four winning designs are reproduced herewith.

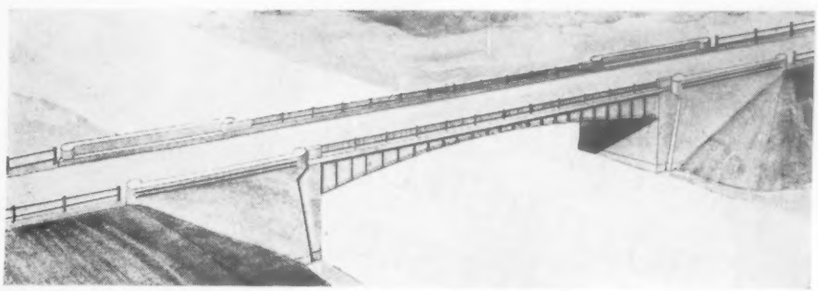
These awards were made from the ten best designs selected in a preliminary competition when 94 students from 22 colleges in the United States entered drawings. The jury of award included Dr. Shortridge Hardesty and E. R. Needles, consulting engineers of New York; H. Craig Severance and J. Andre Fouilhoux, architects of New York, and A. Lawrence Kocher, managing editor of *The Architectural Record*.



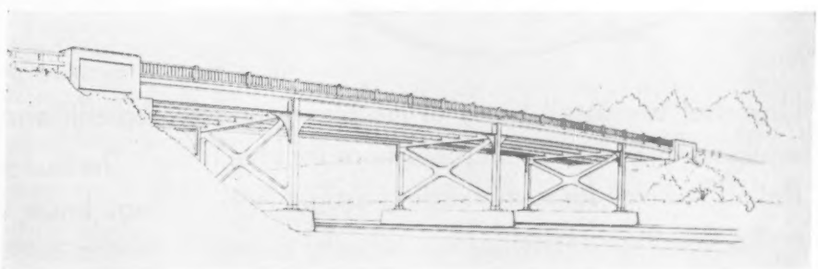
First Prize



Second Prize



First Honorable Mention

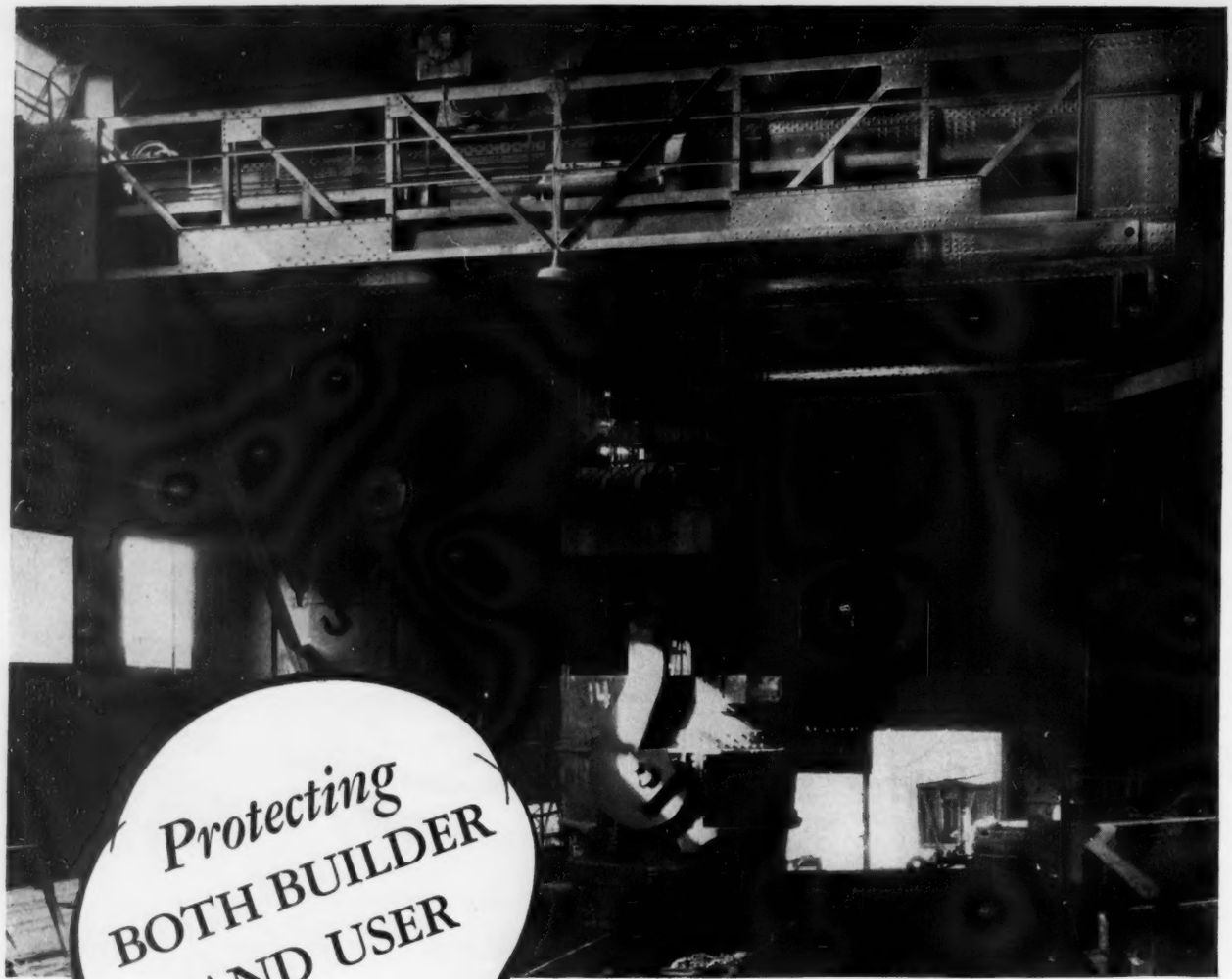


Second Honorable Mention

Cite Architectural Use of Various Steel Products

"The Use of Stainless Steels and Vitreous Enameled Irons in Architecture" was the title of a paper by M. J. R. Morris and Karl Kautz, Republic Steel Corp., Massillon, O., delivered by C. C. Snyder before the American Chemical society, New York, recently. Mr. Morris is chief metallurgical engineer of Republic's Central Alloy division. Mr. Kautz is a ceramic engineer, specializing in field work on Republic's enameling sheets. Mr. Snyder is connected with the alloy steel division of Republic at Massillon.

The paper reviewed briefly the early use of metals in buildings and the influence which other metal structures such as ships and aircraft have had upon the development of steel products in buildings. It further pointed out the particular advantages of stainless steels and vitreous enameled irons for building exteriors, reviewing some of the steel buildings of recent years.



Protecting BOTH BUILDER AND USER

On this 275 ton Ladle Crane built by Alliance Machine Company, Hyatt Roller Bearings are incorporated in all the positions.

Universal use in all types of machinery and equipment evidences the preference for Hyatt Roller Bearings for such exacting assignments.

For wherever installed on wheels, drives, shafts and gears, Hyatt Roller Bearings prolong equipment life by withstanding gruelling punishment — by eliminating frictional drag and wear — and thev accomplish this operating efficiency with a minimum of maintenance.

The builders who employ Hyatt Roller Bearings know what these better bearings mean to the smoother running, care-free performance of their equipment. Dual protection for builder and user alike. Hyatt Roller Bearing Company, Newark, Detroit, Chicago, Pittsburgh, Oakland.

HYATT

ROLLER BEARINGS

PRODUCT OF GENERAL MOTORS

Wood carvings, oil paintings, violins, lamps and boat models were included among the many examples of expert handicraft on display at this employes' exhibition

Employes Reveal Unusual Talent at Handiwork Exhibition in Worchester

PRESIDENT Aldus C. Higgins of the Norton Co., Worcester, Mass., recently invited employes of the company to enter into a friendly competition with examples of their home handiwork.

The usual run of prizes—first, second, third and honorable mention—was offered in two classes of competition, one for men, the other for their sons. When members of the board of directors, acting as judges, entered Norton hall where the exhibits were displayed, they decided that only one way of approaching fair judgment was open to them, so they increased the awards ten times the original number.

Among the many exhibits was one of the finest collections of modern archery tackle in existence, all made by one man. One of the most rugged men in the organization displayed a piece of embroidery, beautifully executed, which he had done when he was 14; and to prove that he still has a delicate touch, he sent in a dozen marvelously tied flies.

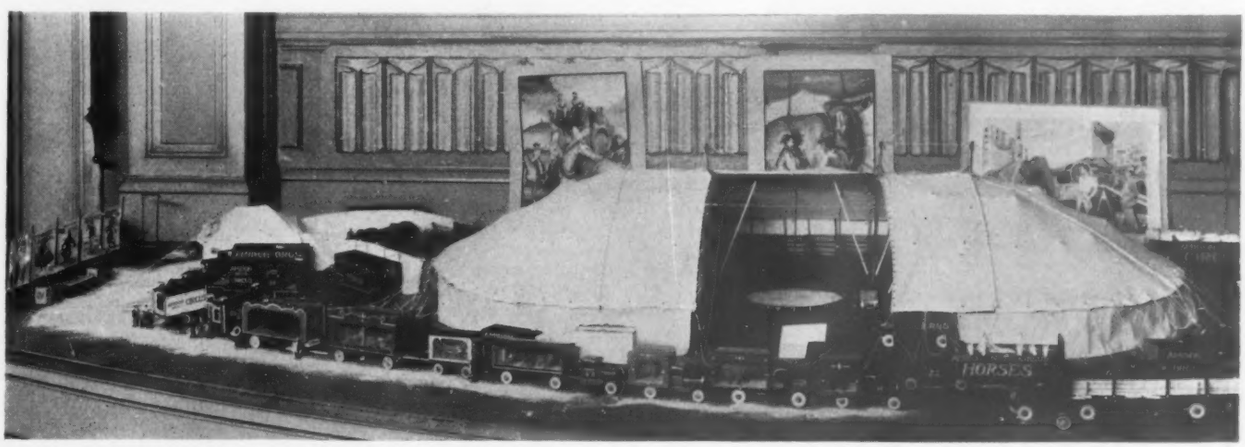
Circus Model Featured

Recreational activities of the men were found to include wood carving, oil painting, the making of violins, lamps and boat models, while one of the sons showed a miniature circus, shown in an accompanying illustration, which required an area of 100 square feet to display. Some workers brought in their own oriental art, such as Japanese screens, imitations of Chinese prints and the like. One came with a home-made deep sea diving suit, another a perfect reproduction in miniature of an ancient wooden plow. A nature-loving man made a miniature garden, planting his grass three weeks in advance of the show and so constructing it with a siphon system that he had water babbling down a hillside into a pool.

Visitors Enthusiastic

Employes and their families were invited to inspect the show during the week of March 4. The first evening 200 came; each succeeding evening more visitors arrived, and it became necessary at times to close the hall because of the crowds. Finally, it was decided to keep the show open another week in order to accommodate all who wished to see it.

The exhibit was notable, first of all, because of the great variety and quality of the various articles ex-



A son of one of the employes built this miniature circus which covered 100 square feet of the display hall. It is complete with sideshows, wagons, tents, billboards and other accessories

hibited, but perhaps the greater influence came from the almost excited enthusiasm shown by thousands who flocked into the exhibit every day and evening for two weeks.

Buys Turbine Flow Meters For Boulder Dam Plant

Bureau of reclamation has awarded contract to Bailey Meter Co., Cleveland, covering turbine flow meters for the initial installation of four 115,000-horsepower hydraulic turbines at Boulder dam power plant. These fluid meters, to be installed on the world's largest hydraulic turbines, will measure water supplied through 13-foot diameter penstocks under an average net head of about 530 feet.

The meters will indicate and record water flow in terms of cubic feet per second and will continuously integrate in millions of cubic feet. Each will be designed for a maximum differential pressure of approximately 120 inches of water and will be connected to Winter-Kennedy pressure connections in the turbine scroll casing.

Flux for Nitriding Iron

Because of the use of aluminum in nitriding cast irons, some difficulty is encountered from the oxide skin formed, and it is claimed that use of cryolite for a flux on the molten metal eliminates such trouble.

Testing Materials Society Announces Program for Detroit Annual Meeting

THE provisional program for its thirty-eighth annual meeting to be held in the Book-Cadillac hotel, June 24-28, has just been announced by the American Society for Testing Materials. Ten of the 15 sessions scheduled for the week will be of direct interest to the metal producing and fabricating industries.

Among subjects to be discussed at these sessions are specifications; testing; steel, wrought iron and cast iron; housing; corrosion; coal; effect of temperature on metals; fatigue of metals; spectrographic analysis; refractories; nonferrous metals; and metallography.

The annual business meeting, presidential address and introduction of the newly elected officers, will take place at the opening session on Tuesday morning. The Edgar Marburg lecture will be presented late Wednesday afternoon and the annual dinner the same evening. The dinner will be followed by addresses on the subject of "The Relationship of Materials to the House of Today and Tomorrow."

Approximately 20 makers of testing equipment will be represented in the exhibit to run concurrently with the meeting. Several A.S.T.M. committees will sponsor exhibits in the show.

Following is the schedule of sessions listing reports of standing committees and technical papers to be presented:

Tuesday, June 25

MORNING

"Relations of Specifications to the Engineering Profession," by C. F. Hirshfeld, chief of research department, Detroit Edison Co.

Presidential address by Hermann von Schrenk.

Annual report of executive committee by C. L. Warwick, secretary-treasurer.

AFTERNOON

Testing; Reports of Administrative Committees

Report of committee E-10 on standards.

Report of committee E-9 on research.

Report of committee E-1 on methods of testing.

"Relation Between the Tension Static and Dynamic Tests," by H. C. Mann, Watertown Arsenal.

"Hardness Testing of Light Metals and Alloys," by R. L. Templin, Aluminum Co. of America.

"A New Method and Machine for Dynamic Hardness Testing," by W. M. Patterson, Tinius Olsen Testing Machine Co.

Discussion on significance of "yield strength" of metals in design and specifications.

Wednesday, June 26

MORNING

Steel, Wrought Iron, Cast Iron

Report of committee A-2 on wrought iron.

Report of committee A-6 on magnetic properties.

Report of committee A-9 on ferroalloys.

Report of committee A-1 on steel.

"Effect on the Elastic Properties of Heavy (3½-inch) Steel Plate by Cold Bending and by Subsequent Stress Relief," by C. H. Gibbons, Baldwin-Southwark Corp.

"Endurance Testing of Rear Axle Gears and Gear Steels," by J. O. Almen and A. L. Boegehold, General Motors Corp.

Report of committee A-3 on cast iron.

AFTERNOON

Marburg Lecture

"Aircraft: Materials and Testing," by Dr. L. B. Tuckerman, principal scientist and assistant chief, division of mechanics and sound, national bureau of standards, Washington.

EVENING

Annual Dinner

Award of Dudley medal to C. A. Hogentogler and E. A. Willis.

"Relationship of Materials to the House of Today and Tomorrow."

"The Federal Housing Problem," by Stewart McDonald, assistant administrator, federal housing administration.

"Role of Materials in Modern Housing," by J. E. Burchard, vice president, Bemis Industries Inc.

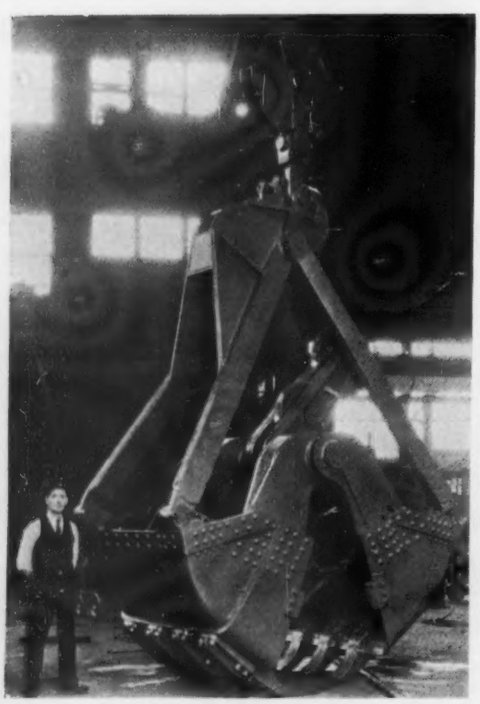
Thursday, June 27

MORNING

Corrosion

Report of committee A-10 on iron-chromium, iron-chromium-nickel and related alloys.

Has Tough Bite



DREDGING BUCKET: Built of welded alloy steel, normalized for grain structure; heat treated shafting; alloy steel rivets, and manganese steel teeth, this heavy-duty Williams clamshell dredging bucket weighs over 20,000 pounds, has 3½ cubic yards capacity and has lifted chunks of concrete as heavy as 18 tons. Built by the Wellman Engineering Co., Cleveland, it was designed to handle heavy rock and concrete in the removal of breakwaters. Combination of welding, riveting and alloy steel makes possible increased strength with minimum weight, together with superior ductility and impact values

Report of committee A-5 on corrosion of iron and steel.
Report of sectional committee on specifications for zinc coating of iron and steel.
"Continuous Flow Corrosion Tests of Steel Pipe," by H. S. Rawdon and L. J. Waldron, national bureau of standards.
Report of committee B-3 on corrosion of nonferrous metals and alloys.
Report of committee D-14 on screen wire cloth.
"Corrosion Testing Methods," by H. E. Searle and F. L. La Que, International Nickel Co.
"Control of Corrosion in Air Conditioning Equipment by Chemical Methods," by C. M. Sterne, Metropolitan Refining Co. Inc.
Report of committee D-19 on water for industrial uses.

Coal

Report of sectional committee on classification of coals.
Report of committee D-5 on coal and coke.

EVENING

Effect of Temperature on Metals, Fatigue of Metals

Report of joint research committee of A. S. M. E. and A. S. T. M. on effect of temperature on the properties of metals.
"Some Tests on Tin Bronzes at Elevated Temperatures," by J. W. Bolton, Lunkenheimer Co.
"Influence of Time on Creep of Steels," by A. E. White and C. L. Clark, University of Michigan and R. L. Wilson, Timken Steel & Tube Co.
"Creep Characteristics of Aluminum Alloys," by R. R. Kennedy, army air corps, Wright Field.
Report of research committee on fatigue of metals.
"The Rotating-Arc Fatigue Machine for Testing Small Diameter Wire," by J. N. Kenyon, Columbia university.
"High-Speed Fatigue Tests of Several Ferrous and Nonferrous Metals at Low Temperatures," by W. D. Boone and H. B. Wishart, University of Illinois.

Friday, June 28

MORNING

Symposium on Spectrographic Analysis

"Spectrographic Analysis of Steel Samples," by W. R. Brode, Ohio State university.
"Use of the Spectrograph in the Platinum Industry," by H. E. Strauss, Baker & Co. Inc.
"Quantitative Spectrographic Analysis of Magnesium Alloys for Manganese and Silicon," by J. S. Owens, Dow Chemical Co.
"Spectrographic Determination of Impurities in Commercial Cadmium," by F. W. Lamb, Bohn Aluminum & Brass Corp.
"Purification of Graphite Electrodes for Spectrographic Use," by G. W. Standen and L. Kovach Jr., New Jersey Zinc Co.

Refractories

Report of committee C-8 on refractories.

AFTERNOON

Nonferrous Metals, Metallography

Report of committee B-1 on copper wire.
Report of committee B-4 on electrical heating, electrical resistance and electric furnace alloys.
Report of committee B-5 on copper and copper alloys, cast and wrought.
Report of committee E-4 on metallography.
Report of committee B-7 on light metals and alloys, cast and wrought.
Report of committee B-6 on die cast metals and alloys.
Report of committee B-2 on nonferrous metals and alloys.

WELDING, et cetera . . .

BY ROBERT E. KINKEAD

IN THIS column, the author, well-known consulting engineer in welding, is given wide latitude in presenting his views. They do not necessarily coincide with those of the editors of STEEL.

Management

SEVERAL years ago five reputable manufacturers sought and obtained recognition of the safety of their welded pressure vessels. The national safety committees issued rules for the construction of such vessels. At the present time there are 16 manufacturers fully equipped to manufacture pressure vessels according to these standards. Under present conditions any one of six manufacturers could fabricate all of the vessels of this classification made in this country. It seems unlikely volume of production will ever be sufficient to fill the two largest shops. Capital investment of the 16 shops is about one and one-half times the annual sales of all pressure vessels of the quality they are equipped to build.

It is a simple statement of fact to say that we advised six of our clients to stay out of the scramble and five of them did. The one who did go into it knew he would be burned but it was that or shut up the shop, in his opinion.

We have cited this case because it ought to illustrate the fact that business management is an extremely involved art. Seldom is it possible to make a clean cut decision with more than six chances out of ten of being right. We are not the least bit cocky about keeping five clients from going broke in this particular way—two of which went broke anyway.

The salvation of our standard of living in this country depends on the ability of our business management to a greater extent than on anything else. The progress made in improving the standard of living is due to good business management. The hope of improving the standard rests solely on the belief that we can have better business management.

Sparks and Flashes

The panels in the deckhouses on the new Navy destroyers are made of 18-8 stainless, spot welded by a completely controlled process. It is a marvelous job. The country could afford to scrap the destroyers after the program is complete and be money ahead for the reason that naval constructors have forced the adoption of new designs and new methods of fabrication of steel which are more valuable than the destroyers. Naval constructors are as able as any other group of engineers in the country and in addition have the courage to step out far in advance of traditional practices.

* * *

In welded steel assemblies, made of rolled steel, high stresses which reverse at high frequency are carried by rolled steel members in such a manner as to have the stress parallel to the direction of rolling. This places the discontinuities which may exist in the steel in such relation to the stress as to give maximum fatigue resistance.

* * *

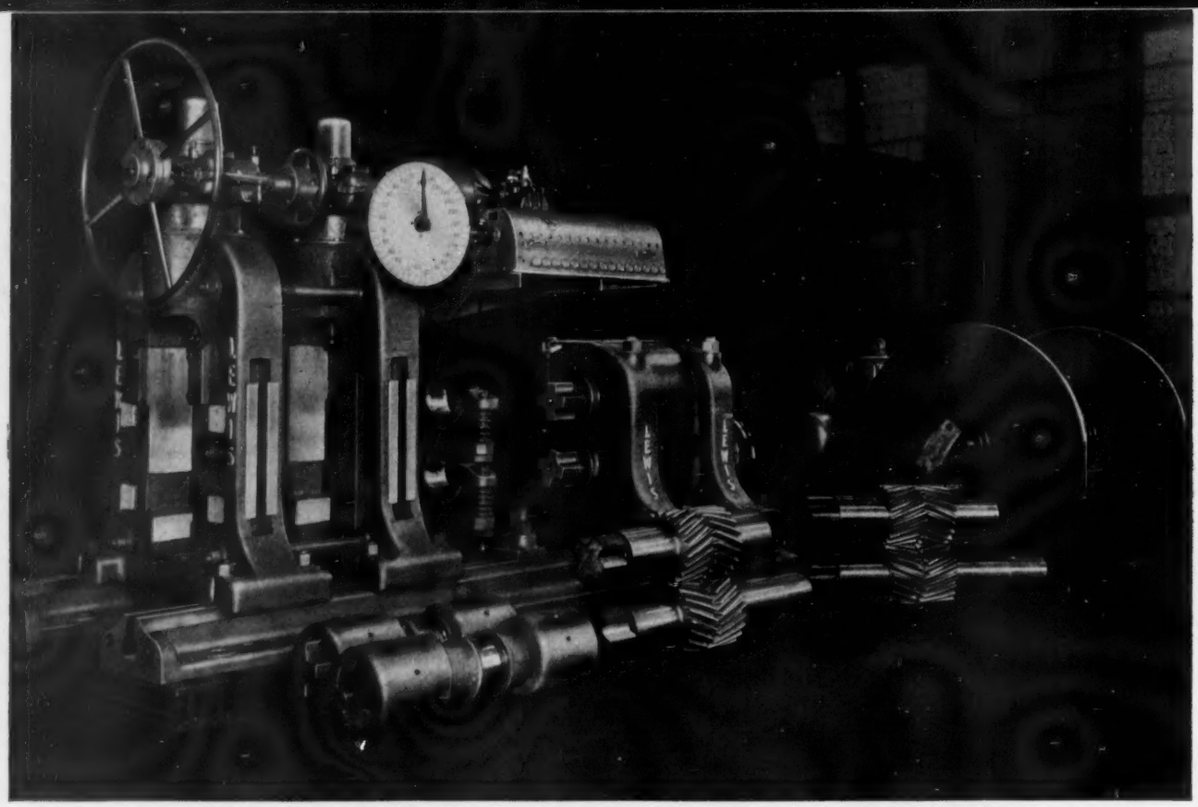
Steel wire manufacturers presently will become aware of a new process for making wire which comes wholly from the rim of rimming steel ingots. This wire will be excellent for gas and electric welding because of its uniformity.

* * *

A considerable element of what is ordinarily called the cost of welding is in reality cost of handling the job. A breakdown of the total cost of welding into details shows what needs to be done.

LEWIS

ZINC STRIP ROUGHING MILL



Here is a LEWIS Zinc Strip Roughing Mill with motor operated screwdown and automatic control of reductions of each pass.

This mill is similar to a Zinc Strip Mill recently built by LEWIS and shipped to the Ever Ready Company, in England.

Zinc Strip Roughing Mills are manufactured complete in the Lewis shops.

LEWIS FOUNDRY & MACHINE CO.
PITTSBURGH, PA.

High-Test Cast Iron Studied At Foundry Conference

UNUSUAL interest in numerous phases of the metallurgy of high test cast iron developed in the sectional foundry meeting held May 9-11 in East Lansing, Mich., under joint sponsorship of the American Foundrymen's association, the Detroit Foundrymen's association and Michigan State college. A number of interesting papers, presenting data on newer developments, brought out a wide range of discussions.

Speaking on "Fundamental Aspects of Cast Iron," W. H. Spencer, metallurgist, Sealed Power Corp., Muskegon, Mich., pointed out that study of gray iron is complicated by the large number and comparatively large amounts of nonferrous materials present. In one case, 43 elements were found in one pig of iron. Amount and distribution of various constituents, including mainly graphite, ferrite, cementite, and pearlite, determine the structure of the iron. The author explained the structure of the constituents and stated that they tend to give physical properties to the iron in proportion to the volume they occupy.

Replying to a question, the speaker stated that copper is added to cast iron to provide corrosion resisting properties for organic acid and atmospheric corrosion. If over 1 per cent is added, often the excess copper segregates, especially when the metal is poured hot. Some other nonferrous metal, such as nickel, must be added to permit more of the copper to be dissolved.

Report on Superheating

F. G. Sefing and M. F. Surls, Michigan State college, presented a paper on "Superheating Cast Iron." The first part of the paper reviewed work which has been done on superheating in this country and abroad; the second part was a progress report of experiments on superheating carried on by the authors.

The following observations were made in the progress report:

(1)—Consistent improvement in properties could not be obtained by superheating alone. (In superheating, it was the aim to vary nothing except furnace temperature.)

(2)—As the time metal is held in the furnace at a higher temperature is increased, more favorable results are obtained.

(3)—High superheat has a tendency to give a structure consisting of fine graphite and ferrite, and that tendency is more pronounced as the size of section decreases.

In discussing this subject, Prof. A. E. White, University of Michigan, Ann Arbor, Mich., spoke of work along similar lines undertaken at his university. Experiments conducted there indicate physical properties improved when the iron was heated above 2700 degrees Fahr. but started to fall off rapidly when the temperature exceeded 2950 degrees Fahr. He attributed this to distribution and size of graphite particles in the final product. Where the metal is superheated to an extremely high temperature, it is likely that these particles will be too large in the final iron.

Practical Use of Alloys

E. K. Smith, Electro Metallurgical Co., Chicago, read a paper, "Alloy Cast Iron," which was devoted to practical aspects of the subject. He pointed out that the use of alloys must be profitable to both the foundry and the ultimate consumer. In the foundry, use of alloys may be profitable by reducing the cost of the mixture, by reducing the scrap losses, and by increasing sales. The consumer may show a profit due to better machinability, increased life of certain types of castings, thus lowering the maintenance cost, and a reduction in weight. In this connection, the author stated that more attention is required in the foundry for irons containing alloys and therefore the cost of a casting containing alloys is increased considerably over the cost of the alloy added.

Mr. Smith discussed the various alloys which are added to gray iron to produce certain specific results, such as nickel, chromium, molybdenum, copper, titanium, etc. He pointed out that the practice of adding alloys in the ladle is increasing and stated that most alloys now are made in a special grade which dissolves easily in the ladle when used in the proper size.

Chill tests, in the speaker's opinion, add greatly to the ease of control of melting, since the test may be accomplished rapidly. Mr. Smith outlined the various physical characteristics which may be desired in gray iron, and indicated the combination of alloys which assist materially in producing these characteristics.

In reply to a question concerning the proper mixture for a chill used in the production of agricultural castings, the speaker stated that chromium is needed to prevent growth and nickel to provide machinability. M. J. Leffler, Oliver Farm Equipment Co., South Bend, Ind., brought out the fact that the amount of alloy which may be added in the ladle, can be increased by preheating the alloy in a crucible before the addition is made. Preheating also may be used to secure better recovery without any amount of the alloy. The author stated that while he had found it possible to obtain a penetration on the surface of a steel casting when chromium is coated on the molds, experiments with gray iron indicated that the chromium will run to one point and that the penetration is far from uniform.

Dr. E. J. Martin, General Motors research laboratory, Detroit, presented an interesting discussion on the fundamentals of spectroscopy. He discussed the apparatus and methods used, and pointed to the possibilities of using the spectroscope for both qualitative and quantitative analyses. Qualitative analysis is accomplished through the identification of the lines which show up in the spectrum of a certain element. Quantitative analysis is accomplished by the comparison of the intensities of lines, providing of course that the two spectrographs under consideration were made under similar conditions. Through the method of limits, it is possible to provide a close approximation of the analysis of a sample.

Good Laboratory Needed

Presenting a paper "Practical Aspects of Founding High Test Cast Iron," W. R. Jennings, Ecorse Foundry Co., Ecorse, Mich., stated that the first step in making high-test irons is providing a good laboratory so that consistency in practice, the secret of success in the production of high test iron, may be obtained. In his estimation, the value of the cupola as a melting medium has been utilized only to approximately 50 per cent of its possibilities. He recommended that in keeping the cupola operation consistent, attention be given the grade and size of coke used, since a good dense coke with a total carbon of 0.90 or better, is necessary. He also recommended the use of pig iron from two sources and stated that scrap-free pig iron should be specified if it is desired to carry additional scrap in the cupola charge.

In a prepared discussion of this paper, Harry W. Dietert, U. S. Radiator Corp., Detroit, stressed the need for the laboratory. He also pointed to the important physical tests usually conducted in the foundry, such as fluidity, chill, shrink, and strain. He also stressed the importance of proper slag control.

In a paper, "Heat Treating Cast

How TO GET MORE FOR YOUR MONEY

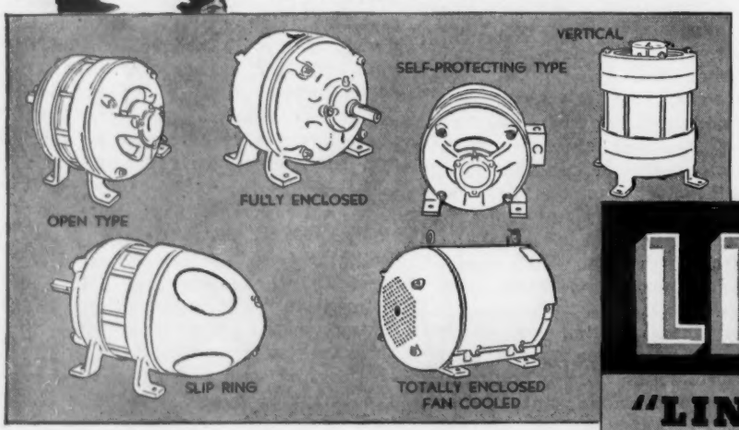
when buying motors . . .

CHECK THE FRAME—This is important, because motor frame sizes are standardized. Thus the frame which has the necessary strength and rigidity with least bulk will allow more room for more copper and iron in stator and rotor. It also will provide larger openings for greater ventilation.

CHECK THE STATOR—Its laminations should be 28-ga. high silicon steel, heat treated, to insure high resistance, low retentivity and perfect insulation. There should be a maximum of iron in the stator section so that there is less idle current. The coil noses of the windings should be extremely short for the most effective use of copper.

LAD "Congress, it seems, will do nothing about birth control."

POP "Yes, and it's too late for birth control to do any thing about Congress . . . so it gets back again to individual preference . . . just as I put it up to our plant electricians as to what motors I should buy—they all wanted *'Linc-Welds.'* Better they should have what they want than to say, 'You *must* take this and like it'."



CHECK THE INSULATION—It should be permanently pliable—should never dry out or crack. Not only should the insulation be waterproof but also highly resistant to acids, fumes and dirt.

CHECK THE ROTOR—Be sure the laminations are not dependent on the windings to hold them together. The windings should be a single piece of metal to provide a perfect electrical circuit. The rotor shaft should be extra large, accurately machined and ground. Fans should have many steel vanes to whip large volumes of air through motor to insure cool operation.

CHECK THE PERFORMANCE—Motors which have the recommended features of construction will outperform all others. Will deliver extra horsepower without sacrifice of power factor or efficiency. Will give you more dependable service for your money. Will bear the name "Linc-Weld" on the nameplate. The Lincoln Electric Company, Cleveland, Ohio.

M-15

LINCOLN

"LINC-WELD" MOTORS

Iron," H. Bornstein, Deere & Co., Moline, Ill., pointed out the three general classifications of heat treatment, namely: (1)—Annealing or normalizing; (2)—quenching and drawing; and (3)—special heat treatments.

Low temperature annealing is employed to speed up the former process of aging, and to prevent the distortion after machining. Temperatures range from 850 to 1000 degrees Fahr., and the time extends from 30 minutes to several hours, depending upon the casting. While annealing provides little change in strength and hardness, a loss of both properties results as the temperature is increased.

Quenching and drawing is employed to obtain greater hardness and strength. Composition is an important item, and the use of various alloy elements increases the response to heat treatment. The maximum temperature usually ranges from 1450 to 1600 degrees Fahr., and oil is used for quenching in a large percentage of cases.

Special heat treatment consists of nitriding to increase wear resistance and other treatments. Mr. Bornstein pointed out that tests are being conducted on sand casting of nitrided iron, a difficult procedure, due to the tenacious gum and viscous slag which is formed by aluminum in the metal. He also discussed various types of malleable annealing equipment and stated that considerable work is being done in improving the annealing of malleable castings and cast products in the intermediate field between malleable cast iron and gray cast iron. In the discussion, Glenn Cooley, Detroit Edison Co., Detroit, stated that some work is being done on heat treating castings inductively.

Test Shows True Elastic Limit

A paper, "Engineering Properties of Cast Iron," by John W. Bolton, metallurgist, Lunkenheimer Co., Cincinnati, dealt chiefly with strength factors of gray cast iron and featured the results of a test which indicated the true elastic limits of cast iron. In a chart presented by Mr. Bolton, the ordinary stress-strain diagram for the iron under test was shown. Another curve indicated the permanent set at various loads, such as 25,000 pounds, 50,000 pounds, etc. That curve was obtained by taking a sample, loading it to 25,000 pounds and then unloading to determine the set. This was repeated with other bars at different loadings. Loading and unloading was repeated 25 times with each sample to determine the permanent set. A third curve then was constructed by substraction of the permanent set from the total deformation. The curve thus constructed is indicated as a straight line. The true modulus of elasticity is about 15,000,000 pounds per square inch, which is considerably higher than would be obtained by an evaluation of apparent modulus from the ordinary stress-strain curve.

Speaking of the "Foundry of 1950," F. J. Walls, International Nickel Co., New York, prophesied that the foundry of the future will be completely air conditioned to eliminate dust and to equalize temperature. Lighting will be controlled automatically by a photo-electric cell. He pointed out that alloys will be much better understood and that waste will be cut to a minimum by rigid inspection of raw materials.

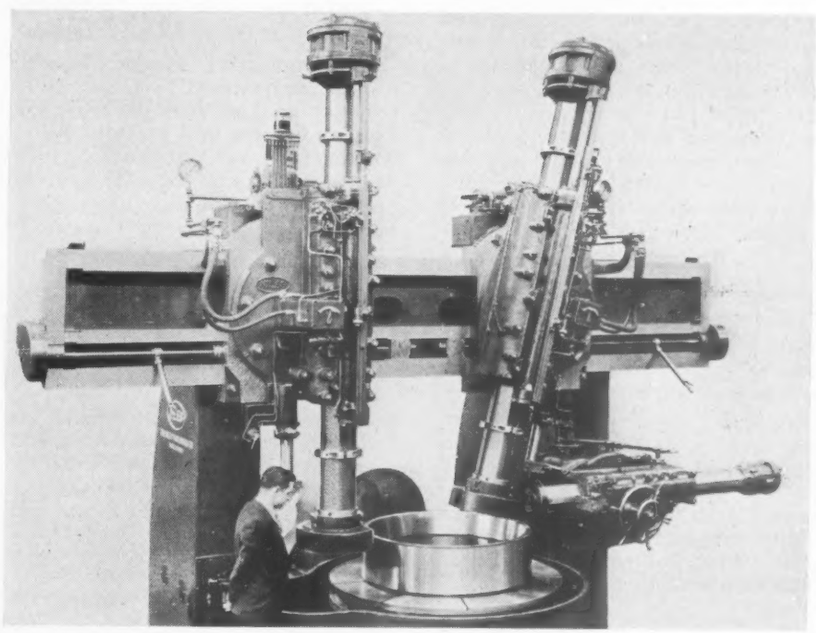
Impact and Static Tensile Properties of Bolts

"Impact and Static Tensile Properties of Bolts" is the title of a 48-page report by Herbert L. Whittemore, George W. Nusbaum and Edgar O. Seaquist and published as research paper RP763 of the National bureau of standards, Washington. It may be obtained from the superintendent of documents, Washington, at 10 cents per copy.

It covers an investigation to determine the properties of bolts under impact and static tensile loading. The bolts studied were made of chromium-nickel steel, cold-rolled steel, monel metal, bronze and brass, and the threads most frequently used in this country.

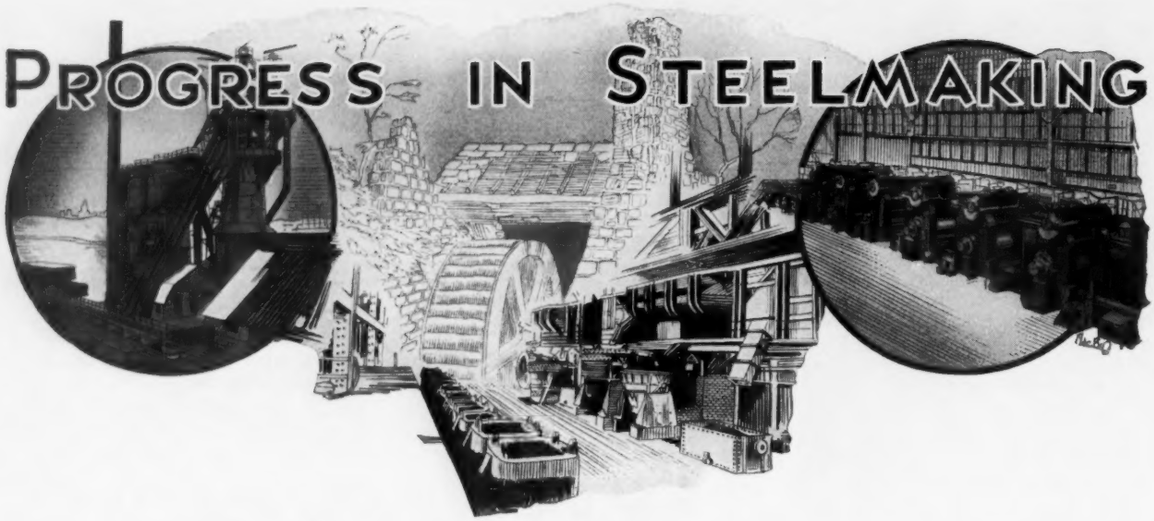
In all cases the impact work for bolts with American national coarse threads was less than for bolts of the same size and material with American national fine threads. Except for the brass bolts and those cold rolled bolts which showed brittle failures, the impact work for bolts with American national fine threads was approximately the same as for bolts of the same size and material with Dardelet threads. In all cases the impact work for bolts with Dardelet threads was greater than for bolts of the same size and material having American national coarse threads.

Grinder Weighs Over 50 Tons



NEW VERTICAL GRINDER, just installed in the plant of Timken Roller Bearing Co., Canton, O., is said to be the largest of its kind ever built. Weighing 105,000 pounds, the machine required three cars for shipment; it stands 18 feet 6 inches above the floor level. It is designed to grind large cups and cones used in heavy-duty bearings to a new degree of accuracy considering their size, a test run on a bearing cup having outside diameter of 47 inches showing a runout of only 0.00025-inch. The machine is set up to grind units up to 65 inches outside diameter and 36 inches high. Carrying a magnetic chuck 66 inches in diameter, it is driven by a 5-horsepower variable-speed motor. Two vertcal spindles approximately 12 feet long, each driven by a 25-horsepower motor at 1200 r. p. m., and one horizontal spindle driven by a 5-horsepower motor at 1800 r. p. m., enable three surfaces to be ground at one setting, included angles up to 60 degrees being within the range of this machine. Ten motors are required in the operation of the unit. The two vertical spindles are reciprocated by means of a hydraulic system. Builder is the Niles Tool Works Co., Hamilton, O.

PROGRESS IN STEELMAKING



Decreases Production Cost

Elimination of so-called "sonims" from molten open-hearth steel by the formation of a slag fusible at a temperature lower than that of the solidification temperature of the steel and serving as a medium for these sonims to incorporate themselves into new compounds, is the purpose of a recently marketed compound. At an Ohio steelworks the use of the product has afforded a better ingot yield, less segregation, a saving of $1.90 per ton in the cost of production and the elimination to a large extent of secondary pipe and thin-skinned ingots. The compound has a high percentage of alumina in its composition; it is added in the ladle in paper bags of 50 pounds after the metal in the ladle is 2 feet deep and previous to the ferro additions. When the product is used on silicon-killed steel it is not necessary to use aluminum or titanium in the ladle.

♦ ♦ ♦

Operated from Car Platform

Large annealing boxes now may be inserted or removed from annealing furnaces by dogs operated from the cab or platform of a recently developed transfer car. The latter has a normal pushing capacity of 100,000 pounds and a maximum pushing capacity of 200,000 pounds which is ample for moving 15 or more trucks with a combined weight of 1300 tons.

♦ ♦ ♦

Heating Gun Is Oil Fired

Kerosene or stove oil is used as fuel in a new portable steel fire gun which is intended as a combination thawing and heating torch. The unit serves for such diversified purposes as for thawing water lines and frozen railroad switches at iron and steel plants. The gun has a 4 gallon fuel and air tank made of corrugated copper bearing galvanized and lead coated steel. The burner, which is made of seamless steel tubing, is equipped with a bronze regulated valve. A flame up to 3 inches diameter and 30 inches long, at a temperature of approximately 2000 degrees Fahr., is produced. The unit weighs 20 pounds and is equipped with the snap shoulder strap.

♦ ♦ ♦

Records Thickness of Lining

Checking the thickness of blast furnace linings accurately is accomplished by the use of thermocouples. These should be installed before the stack is blown in by locating the hot junctions about 1 foot from the in-wall and connecting the cold junctions to a recorder of the multiple point type.

♦ ♦ ♦

Extends Chisel Campaign

Bars used for prodding carbon off the walls of the eyes in coke ovens stay in service longer when the chisel edge is hard faced. Steel chisels dull after two prods while those hard faced stay in use for many weeks.

Five Money-Saving Ideas

Gypsum slabs, which frequently are used to roof power plants and substations, disintegrate because of a dehydrating action. Coating these slabs with an asphalt-base aluminum paint seals the gypsum against dehydration and greatly assists in overcoming this trouble.

♦ ♦ ♦

Cement and wooden shop floors frequently are damaged by the edges of iron truck wheels. This is prevented at one plant by chamfering the outside edges of all wheels.

♦ ♦ ♦

Rail joints of overhead traveling crane systems should be kept closed to prevent hammering. Otherwise, continued pounding as the crane passes over them flattens out the rails at the junctures and frequently cause flat spots on the tread of the wheels. Welding the joints with manganese steel rods eliminates this condition. The practice followed at a steel plant in the Pittsburgh district is to weld the joints with a softer rod and then use a manganese rod for the surface.

♦ ♦ ♦

Empty electric light sockets, which are exposed to the weather on blast furnace and steelworks trestles can be protected effectively by the use of ordinary cork bottle stoppers to plug up the socket. This prevents "weathering" on the interior of the socket.

♦ ♦ ♦

Alloy steel shafts heat treated and ground to uniform diameter have been found highly satisfactory for steel mill ladle cranes and for cranes serving the soaking pits and mold yard. This grade of shafting reduces bearing friction, gives longer service and affords a higher factor of safety.

ADVERTISING PAGES REMOVED

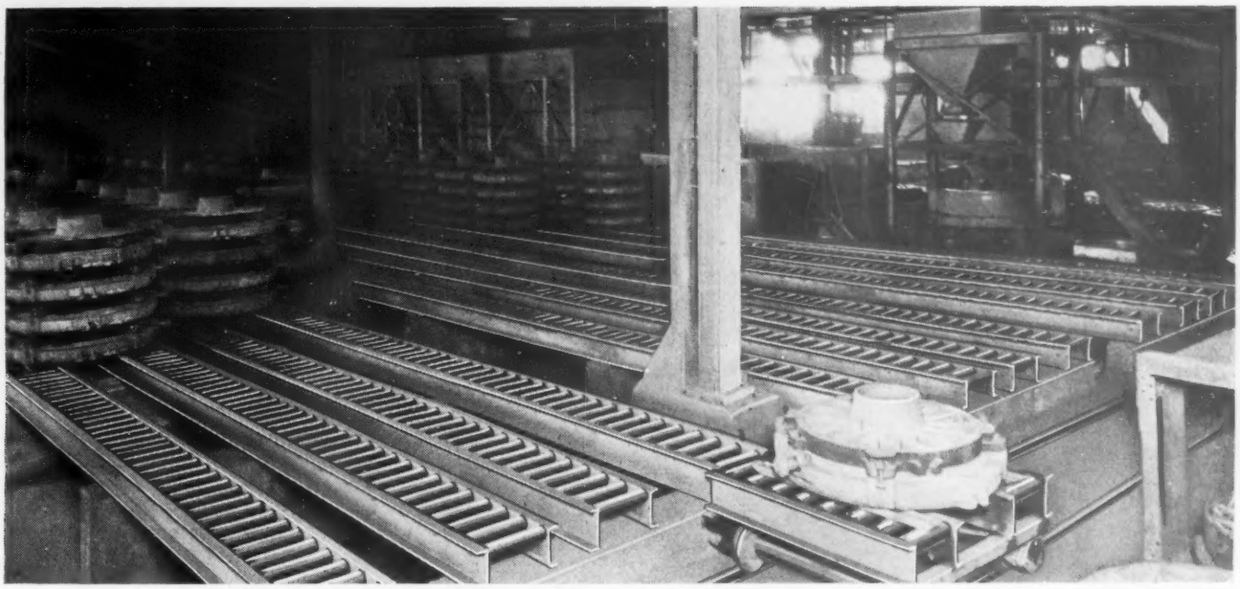


Fig. 1—Multiple storage lines of gravity conveyors assure and simplify high production of car wheels

Gravity Roller Conveyors Effect Uniform Output

BY SMITH EGGLESTON
Assistant Chief Engineer, Standard Conveyor Co., St. Paul

UNTIL recent years, conveyor manufacturers had little to offer the steel mill and foundry industry for solving their transportation problems. It therefore was difficult for these industries to incorporate conveyors with their other labor-saving devices.

Conveyors have been in use in the steel and foundry industry for some time, but only those systems placed in operation within the past five or six years have been satisfactory; installations prior to 1928 were comparatively short lived and required continual maintenance and repair. The general consensus of opinion was that slow moving trucks and overhead cranes were the best means for handling the products of these industries during the course of manufacture.

Satisfactory conveying equipment for other industries has been available for a longer period of time. In fact, complete brewery installations have been in operation for over 30 years.

But the general application of conveyors, as covered by the large majority of industries, did not overlap into the steel group where ingots, coils of steel, packs, molds, and heavy castings weighing as much as 40,000 pounds, had to be handled. The construction necessary to withstand these weights and impacts and still give a smoothness for such conditions as handling sensitive molds in a foundry, was an unusual combination.

Naturally, the initial cost of conveyors built to handle these enormous weights was high. In addition it was difficult for the steel industry to see where such a large expenditure could result in a savings when the transportation units per hour would be as few as are encountered in this field. Where some industries rate their capacities at 2000 or 3000 packages per hour, steel and foundry plants rate their peak loads at only 40 or 50 steel packs or molds an hour.

Another condition that existed in the steel industry was the natural periodic rate of production. Along with this, the continued presence of dirt in the form of sand and scale all tended to decrease the life of the equipment. The existence of this rust inviting combination soon necessitated some positive means of protection to the equipment over these inoperative periods.

With the foregoing situations in mind, attention was turned to developing satisfactory equipment to withstand these destructive conditions, and to give the long life necessary to show the profit expected from such initial high expenditure. The natural starting place was in the bearing of the roller conveyor itself since most equipment embodies this elementary construction as a starting point. After considerable development work, the following improve-

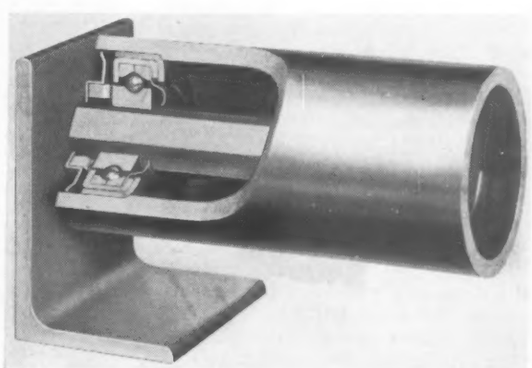


Fig. 2—Cutaway section of a roller and bearing with its protecting shield. The bearing is of the grease sealed type which affords protection against sand, scale and gas fumes

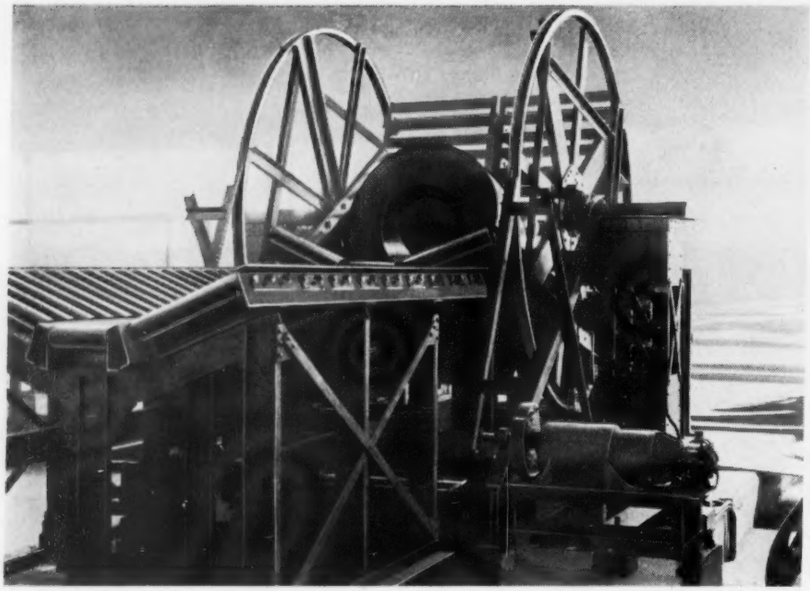


Fig. 3—Coil upender showing strip steel just before it is delivered on end to a line of gravity conveyors

ments were found to fulfill the requirements.

Bearings were developed to give a free turning roller and at the same time revolve concentrically to give smooth operation. A means for locking the inner cone so that it would not revolve on its supporting shaft was devised. This was found essential because the presence of any foreign matter in the bearing would lock the balls and cause the bearing to turn on its supporting shaft. It was found, however, by locking the cone, an occasional piece of dirt would be worked out by the continual turning of the roller. The sealing of the bearing against sand and scale was accomplished by grease and provisions made for regreasing so that the bearing could be flushed periodically to remove foreign matter. This grease, of course, would keep the bearing from rusting.

Other Precautions Taken

In addition, a heavy protecting shield was placed over the exposed end of the bearing to give a labyrinth effect as well as protect the bearing against molten metals. The inner and outer races were heat treated carefully to give long life and at the same time have a good margin of safety to carry the load. The introduction of welded construction in the supporting frames of the roller conveyor also helped by minimizing the possibility of the side rails spreading.

Two general types of roller conveyor are available, the most common being with the rollers horizontal, and centers spaced sufficiently close to withstand the loads and successfully handle the commodity. The other type is useful particularly for handling cylindrical objects such as coils of steel where it is necessary to carry the coils with their axis in the direction of travel. The latter is made up of two or more lines of roller conveyor positioned to form a trough, or "V"-shaped cross section.

As previously mentioned, the rollers with bearings are embodied in many types of power conveyors associated with this industry. The following types will emphasize this fact more clearly.

The roller conveyor is used as a roll-way for supporting commodities handled and in turn the commodity is propelled along the conveyor by a moving chain with lugs that project above the top of the rollers. This construction is used most commonly when it is not possible to have satisfactory pitch so that the commodity will travel by gravity or in cases where it is necessary to go up inclines.

Power roller conveyors are constructed the same as gravity conveyor except that power is applied to each individual roller through chain, gears, or belts. This construction is naturally more expensive than the foregoing type, but has its use when the projecting lugs mentioned might damage the commodity handled or conditions might exist where it is advisable to hold up the commodity momentarily while the conveyor continues to operate.

Overcome Chain Friction

Heavy drag chain conveyors also are used extensively in these industries, and gravity conveyor plays its part here by being used to support the chain itself. By supporting the chain on close centered roller conveyor rather than steel sliding strips, the friction greatly is reduced.

When apron conveyors are used, it sometimes is advisable to attach the slats to the drag chain in place of the roller chain. This substitution again permits the chain to be carried by gravity rollers, giving a much lower power consumption.

Roller conveyors also play an important part in all the accessories such as turntables, coil upenders, turn-over devices, sheet and plate transfers, and many other special devices which are developed to meet particular needs and requirements.

Much is expected from conveyor equipment and low maintenance is essential. The past five years have shown that the improved designs have fulfilled these requirements. In general the experimental stage is passed. Their importance no longer

(*Please turn to Page* 58)

Fig. 4—Typical live roller installation with rollers placed vertical to form a guard rail and reduce friction

Announcing

EXPANDED FACILITIES

to meet the rapidly increasing demand for

GRANITE CITY ELECTRICAL SHEETS

PROVED BY 3 YEARS OF USE IN THE ELECTRICAL INDUSTRY

•

Not one single complaint in 3 years from a user of these special Granite City Electrical Sheets.

An excellent reason why you should be interested in requesting samples.

GALVANIZED SHEETS
STEEL SHEETS
PLATES AND
TIN PLATE

•

SINCE
GRANITE CITY STEEL
1878

GRANITE CITY STEEL CO

GRANITE CITY, ILLINOIS
5719 Ellsworth Ave., Dallas
916 Walnut Street, Kansas City
110 South Dearborn Street, Chicago
1805 Boatmen's Bank Bldg., St. Louis
1613 Pioneer Building, St. Paul
1502 Mariner Tower, Milwaukee
1750 Army Street, San Francisco

GEAR MAKERS DISCUSS NOISELESSNESS:

Design, Inspection and Correction of Slight Errors Are Principal Factors

PRODUCTION of gears for noiseless operation at high speeds was a subject that received major attention at the nineteenth annual meeting of the American Gear Manufacturers association, at Wilkinsburg, Pa., May 14 and 15. The influence of design and of such operations as burnishing, shaving, lapping and grinding were discussed at length, and also the possibilities of improved inspection methods which show the producer the errors in the gears he is making and suggest the remedies. Revision of recommended practices and the setting up of new AGMA standards, as revealed at the meeting, are progressing satisfactorily.

By resolution adopted at the meeting, no recommended practices of the association's committees hereafter will be released to companies outside of the association's membership excepting by approval of the executive committee. The purpose is to prevent dissemination of recommended practices which are subject to changes. The resolution has no bearing on the existing policy of releasing adopted standards for the guidance of machine designers and other users of gears.

British Standards Reviewed

Prof. Earle Buckingham, Massachusetts Institute of Technology, Cambridge, Mass., presented a discussion of the proposed British standard specifications for worm gearing which, with certain exceptions, he regarded as representing sound, conservative practice. Subsequently, the report of the worm gear committee, by T. R. Rideout, Nuttall Works, Westinghouse Electric & Mfg. Co., Pittsburgh, showed that much work has been done toward the preparation of a recommended American practice for the design of worm gears and that this will materialize in the near future and that it will be much along the lines of the British standard.

It was urged by A. A. Ross, General Electric Co., West Lynn, Mass., that each of the 14 subcommittees of the general standardization committee of which he is chairman, consolidate its recommended practice. The purpose, as explained by M. T. Schumb, Boston Gear Works Inc., North Quincy, Mass., is to convert these recommended practices into AGMA standards so that they will be available for publication in the series of gear books now being edited by Prof. Earle Buckingham. As announced at the meeting, the first two volumes in this series have been printed and now are for sale.

Prof. Buckingham reported that the spur gear committee has been occupied with the preparation of a manual and that several of the recommended practices contained should be considered for adoption as AGMA standards. Among these is a practice covering the use of small teeth where a large reduction of motion is to be accomplished.

R. B. Zerfey, Tool Steel Gear & Pinion Co., Cincinnati, reported that the keyway committee has completed its work in connection with recommendations on keys and keyways and that it now is working on a recommended practice for involute splines.

Reports on Railway Gears

The report of the electric railway gear committee, by T. R. Rideout, Nuttall Works, Westinghouse Electric & Mfg. Co., Pittsburgh, disclosed that the work of bringing up to date and consolidating recommended practice covering electric railway gears has been completed and it is expected that this shortly will be set up as AGMA standard. Another committee, on tooth form, as reported by U. Seth Eberhardt, Newark Gear Cutting Machine Co., Newark, N. J., also has completed its work along these lines.

For the sprocket committee, Prof. G. M. Bartlett, Purdue university, Lafayette, Ind., submitted a recommended practice covering maximum number of revolutions per minute and maximum chain velocities for American standard roller chains.

A new manual of uniform cost accounting was submitted by H. N. Mathias, Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa., and will be submitted to the code authority of the gear manufacturing industry for approval.

Ira Short, South Philadelphia Works, Westinghouse Electric & Mfg. Co., chairman of the helical gear committee, reported progress in the development of tooth load formulas. Completion of the recommended practice covering the structural design and application data of nonmetallic gears and pinions was announced by H. R. Moyer, Westinghouse Electric & Mfg. Co., East Pittsburgh Pa.

The report of the metallurgical committee, by Chester B. Hamilton Jr., Hamilton Gear & Machine Co., Ltd., Toronto, Ont., indicated a need for more information as to what constitutes good material for cast iron and semisteel gears, particularly large gears. Possibilities of additions of alloys, such as nickel and molybdenum, to cast iron, have not yet been fully explored, it was thought.

Prof. Buckingham described tests made to determine the nature of different kinds of wear incurred in pure rolling contacts, with cast iron, semisteel, nitrided steel and other materials. These so far have shown that effects of such fatigue are very gradual. Microscopic failure began to be noted after 100,000 to 500,000 revolutions, according to the material, although actual failure did not occur until 2,000,000 to 5,000,000 revolutions had been made.

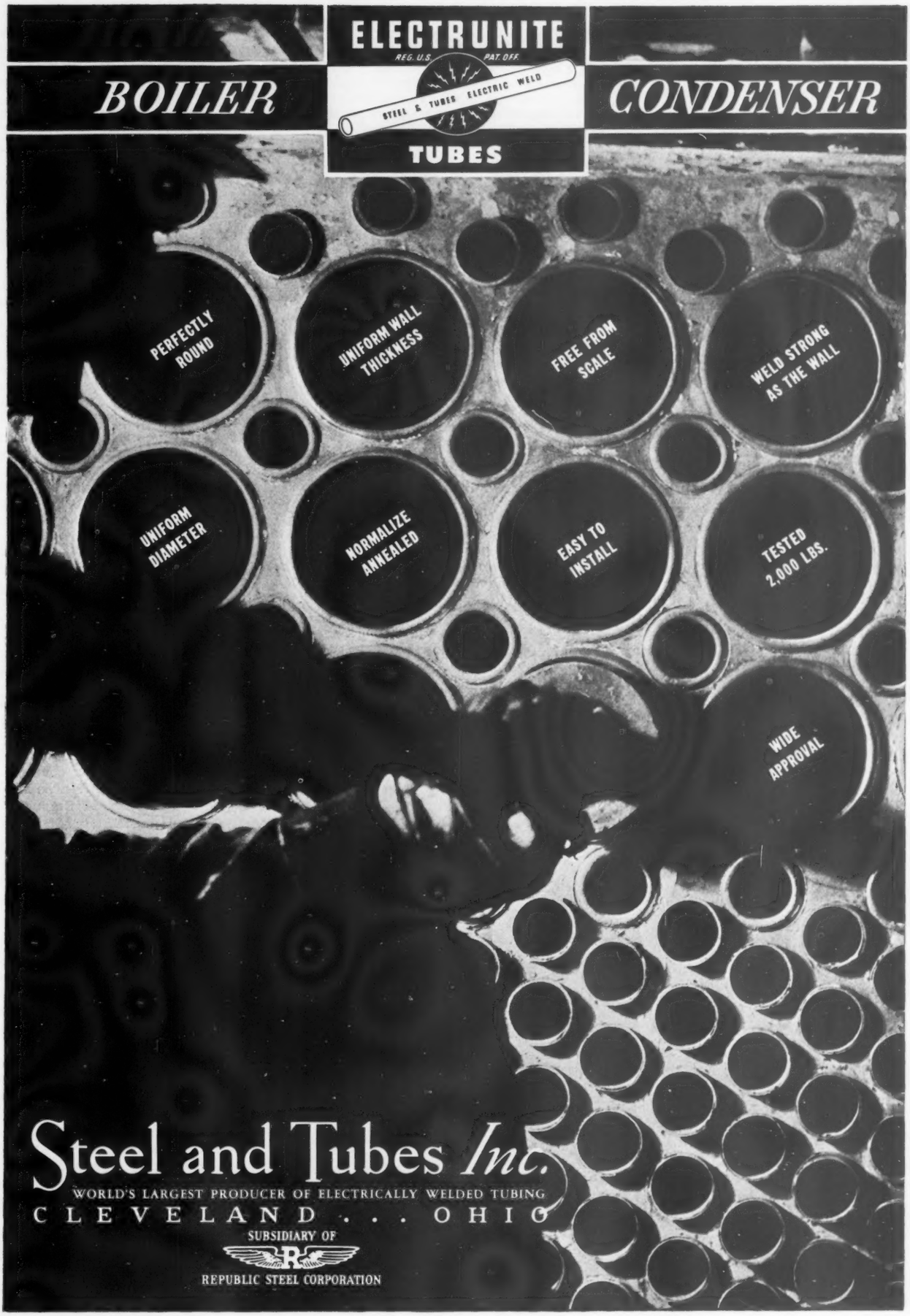
Tooth Shapes vs. Noise

"Trick" tooth shapes are of no value in taking the noise out of gears, said S. O. Bjornberg, Illinois Tool Works, Chicago, in a paper entitled "Inspection Methods That Give a New Conception of Gear Accuracy." Accuracy, he said, is the real requirement for obtaining quiet gears and he cited the quiet operation of ground master gears as an example. Accurate checking of gear tooth elements, he said, enables any manufacturer to ascertain why errors occur and how his practice may be improved. He described a number of new tools used in such checking. These include an involute measuring machine, a normal pitch measuring machine, a helical lead checking machine and a gear charting machine.

While Mr. Bjornberg's paper was devoted to automobile gears, the subject of industrial gears came up in discussion. Because there is more deflection in large industrial gears than in small automobile gears, he said, the designer must take this factor into consideration. The use of tip relief, he said, is a big aid in meeting this condition.

"Rotary Crossed Axes Shaving of Spur and Helical Gears" was the title of a paper by R. S. Drummond, National Broach & Machine Co., Detroit, in which was described a method of finishing gears, after they had been

FOR additional details of meetings of American Gear Manufacturers association and the gear manufacturing industry, at Wilkinsburg, Pa., May 14-15, please see Page 18, this issue.


ELECTRUNITE
REG. U.S. PAT. OFF.
STEEL & TUBES ELECTRIC WELD
TUBES
BOILER
CONDENSER
PERFECTLY ROUND
UNIFORM WALL THICKNESS
FREE FROM SCALE
WELD STRONG AS THE WALL
UNIFORM DIAMETER
NORMALIZE ANNEALED
EASY TO INSTALL
TESTED 2,000 LBS.
WIDE APPROVAL
Steel and Tubes Inc.
WORLD'S LARGEST PRODUCER OF ELECTRICALLY WELDED TUBING
CLEVELAND . . . OHIO
SUBSIDIARY OF
REPUBLIC STEEL CORPORATION

cut to within 0.004-inch of true dimensions, by shaving. The object of rotary axes shaving, said the author, is the economical reduction of gear errors to a value which is negligible, by correcting the proportions and finish of the gear teeth. For gears produced by this method he claimed less noise, longer life and more accurate mechanical operation.

In this type of shaving the work gear is rotated under only slight pressure with a special cutter in the form of a gashed helical gear. The work gear and the cutter have different helical angles. At the same time, the angle made by their axes in the machine set-up is equal to the difference in their helical angles, normally 10 to 15 degrees, although this range may be increased or decreased. The relation of the axes compensates for the variation in sliding action due to the involute roll. As gear and cutter tooth are brought together, cutting continues toward the pitch line up to the center point, and in the reverse direction as they pass that point and separate.

Extended Cutter Life

Mr. Drummond had with him samples of automotive gears finished in this matter at the rate of one per minute; cutters employed on this work, he said, are good for 10,000 pieces before regrinding becomes necessary.

Slight errors in gears following heat treatment may be eliminated economically, on a production basis, by lapping, it was shown in a paper read by D. T. Hamilton, Fellows Gear Shaper Co., Springfield, Vt., with accompanying demonstrations of gear errors by Robert Beardsley, Jones & Lamson Machine Co., that city. In automobile practice the lapping of spur gears is accomplished at the rate of 4 minutes per gear, with 800 to 1200 gears per set of laps. Mr. Hamilton described the use of the inspection machine known as the Red Liner, which affords a reading of the combined results of all errors. Typical readings obtained with this machine, he said, demonstrated that the lapping method satisfactorily corrects slight errors after heat treatment. This method, he said, is highly effective in producing gears that will operate noiselessly.

"Modern Heat Treating Methods and Their Application" was the title of a paper read by Jordan Korp, Leeds & Northrup Co., Philadelphia. This was devoted to hardening of tools, gears and other parts in controlled atmosphere furnaces.

A paper entitled "Seeing Goes to Work in Industrial Plants," was read by E. D. Altree, incandescent lamp department, General Electric Co., Pittsburgh. This showed a gain in production through the proper use of illumination.

Industry Needs Home Building

Absence of residence construction in recent years has meant a lack of gear demand from planing mills, cement mills and other industries producing building materials, said J. C. McQuiston, manager-secretary, American Gear Manufacturers association. An analysis in the Chicago district showed that 43,328 marriages were consummated in 1926 while during the same year 41,416 homes were built in that community. In 1934, in this same district, there were 41,750 weddings while only 189 new homes were built. On the other hand automobiles are selling in large numbers, said Mr. McQuiston, who believed that the real reason why the business of building automobiles has outrun the building of houses is the efficiency of automobile manufacture which has given buyers far greater value for their dollars.

"It is strikingly evident," said Mr. McQuiston, "that if we ever attain to the building of homes at a cost anywhere comparable with that of automobiles, it will be necessary to produce more and more of the home by factory production. Carpenters and others engaged in building construction inevitably will disappear, as have lathers and plasterers in the past."

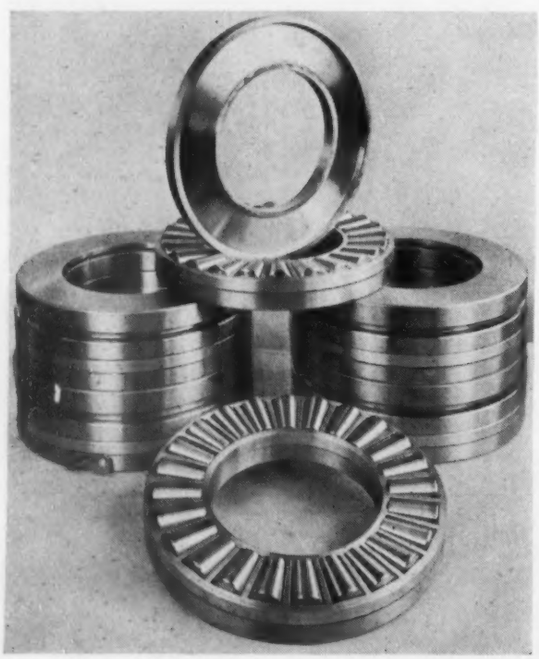
Open Hearth Design

DISCUSSION of the open-hearth furnace system located beneath the charging floor, and methods for designing it along more efficient lines will be presented by William C. Buell Jr. in a new series of articles which will be published in STEEL, *beginning with an early issue.*

As in prior articles, the attempt is made to place the solution of all technical problems in such simple form as to carry a sufficient understanding to the lay reader, and through a continuation of the use of graphics, to offer a rapid method of solution of furnace design problems to the technical reader.

A synopsis of the articles to be presented includes layout, slag pockets, fantails, regenerators, connecting flues, checker work, design of checker passes and flues, flue system, valves, waste-heat boilers and system control.

Conical Roller Thrust Bearings



THESE BEARINGS are of a special conical roller thrust type, 14 inches inside diameter by 24½ inches outside diameter by 4 9/16 inches thick. They have a thrust load capacity of 1,000,000 pounds at operating speed. Bantam Ball Bearing Co., South Bend, Ind., supplied 36 of them with 24 aligning seats to Consolidated Steel Co., Los Angeles, for installation in lifting mechanism for the cylinder gate hoists at Boulder dam. Rollers and races are of S.A.E. 52100 steel, heat treated by a differential hardening method. One-piece lubricating-type bronze cages are used to retain the rollers with accurately machined pads contacting the rollers at the pitch line

Gravity Roller Conveyors Effect Uniform Output

(*Concluded from Page* 54)

is questioned. Expensive machines are not held up for lack of material and production continues with machine-like regularity. The safety of the operators themselves greatly is benefited by definite means of transportation. Work arrives at the proper place at the right time and in the proper position, and operators can give their entire attention to their specific work without being distracted by other operations.

Widely separated machines are brought together by this modern conveyor transportation means with an easiness comparable to present day disregard for distance. Now that conveyors have been developed and have proved their unfailing service in the steel mill and foundry, it perhaps will not be long until these industries are fully "conveyorized."

ADVERTISING PAGES REMOVED

NEW EQUIPMENT

Flip Front Welding Helmet—

Willson Products Inc., Reading, Pa., is introducing a new flip front welding helmet, shown herewith. Outer section of the composition glass holder with Willson-Weld and clear cover glass, flips up instantly for weld inspection, being actuated by springs enclosed in the hinge joints. Slight projections on both lower sides provide thumb space for instant flipping. A clear glass in the stationary section of the holder remains before the eyes when the front is open. Glass holder is molded of a high grade plastic composition which will not warp or bend, it is claimed. It is not a conductor of electricity and is said to be unaffected by moisture or extreme temperatures.

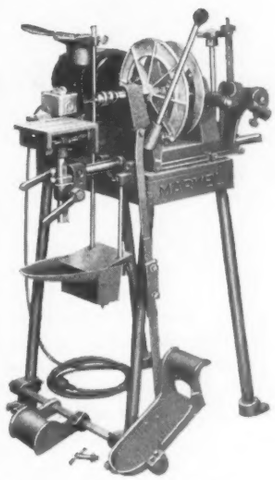
Flip front enhances utility of Willson welding helmet

◆ ◆ ◆

Tapping Machines—

Armstrong-Blum Mfg. Co., 347 North Francisco avenue, Chicago, is placing on the market a complete new line of horizontal, friction-type, motor-driven tapping machines. Seven models are available including the floor model with foot treadle and hand levers shown herewith. Capacity range covers fine thread No. 0 to ½-inch U.S.S. taps, in steel.

A sliding table on all models provides micrometer screw adjustment for depth and simplifies holding fixtures. All seven models are available in any of the following equipment combinations: Bench or floor types, all motor driven; spring-return sliding-table action only; rear lever action, with spring return; front lever action, with automatic depth trip and reverse; foot treadle action (on floor models only), with automatic depth trip, automatic reverse; quick-change spindles available for threading, tapping, nut or stud driving, etc.; special two-tap geared spindle available for No. 0 to ¼-inch capacities. Any of the foregoing equipment can be added to plain models at any time. Seven capacity ratings and seven spindle speeds also are features of the new machines.



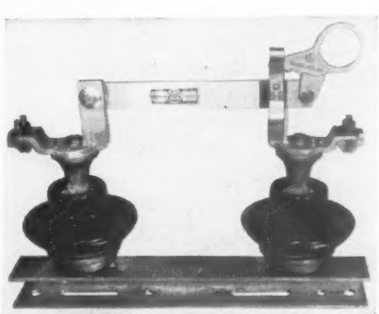
Armstrong-Blum tapping machine, floor model

◆ ◆ ◆

Disconnecting Switch—

Delta-Star Electric Co., 2400 block, Fulton street, Chicago, has placed on the market a type RFB-2C disconnecting switch for lightly loaded 7.5 and 15 kilovolt circuits. The device, shown herewith, embodies nonferrous parts on the "hot" side, self-aligning contacts, safety latches and solderless lugs.

The formed steel universal base was developed for use where the cross arm spacing in double arm construction is approximately the same as the switch insulator spacing. Insulator units are mounted on one flange, the mounting holes are on the other. This permits easy replacement of insulators as there is no interference between the cross arms and insulator bolts.

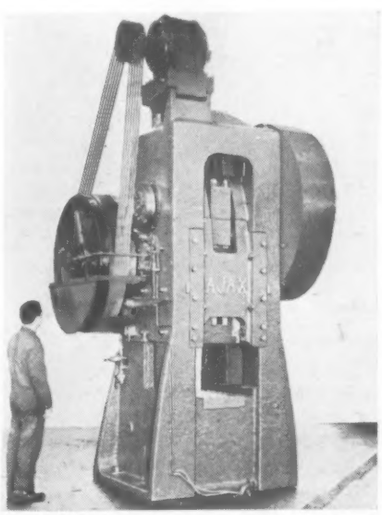


Delta-Star disconnecting switch for lightly loaded circuits

◆ ◆ ◆

Solid Frame Forging Press—

Ajax Mfg. Co., Euclid, O., recently introduced a line of solid frame forging presses ranging in capacities from 500 to 1800 tons inclusive. These units, one of which is shown herewith, are designed primarily for accurate hot forging work and precision hot or cold coining of forgings and pieces produced by other methods.



Extreme rigidity of frame is feature of this Ajax forging press

The same type of direct pneumatic-operated multiple disk friction clutch that the company developed for its horizontal type forging machines is employed on these new presses. A piston carried within the flywheel,

behind which air is introduced, applies pressure directly to the friction plates and gives instantaneous but cushioned response to tripping, accomplished from a small auxiliary foot or hand-operated air valve as preferred.

The frame is a solid one-piece steel casting, short from crankshaft to die seat and of heavy cross section to provide extreme rigidity. The main gear which drives the eccentric shaft is built of welded steel construction with a high carbon wear-resisting rim in which the teeth are cut. Individual motor drive is arranged through multiple V-belts from the motor mounted on an adjustable hinged bracket at the top of the frame. A hand brake is provided to stop the flywheel from coasting after the power has been shut off, in order to save time in making die adjustments and changes.

♦ ♦ ♦

Combined Valve and Control Instrument—

Hancock Valve Division, Consolidated Ashcroft Hancock Co. Inc., Bridgeport, Conn., recently brought out a Flocontrol valve for regulating

Hancock Flocontrol valve built with micrometer adjustment

the flow of steam, oil, water or gas. The flow through the device is directly proportional to the turns of the handwheel. Moreover, there is a micrometer adjustment below the handwheel to enable the operator to read to one-tenth of a turn. The new valve, shown herewith, is built with a bronze body for pressures up to 300 pounds. Either globe or angle types in sizes from ⅜ to 2 inches are available.

♦ ♦ ♦

Heavy Material Spray Gun—

Binks Mfg. Co., 3105-50 Carroll avenue, Chicago, has perfected a new straight line heavy material spray

Thor model 20 gun for spraying heavy materials, built by Binks Mfg. Co.

gun, shown herewith. Designated Thor model 20, the gun is designed to apply such materials as cut back asphalt, sound deadener, insulating and other heavy materials. The ¾-inch material passage is on a straight line with the nozzle, thus eliminating the possibility of clogging. The ⅜-inch air inlet is seen just above the material inlet. Nozzle sizes vary according to the material to be sprayed.

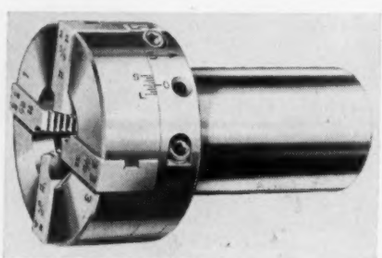
♦ ♦ ♦

Solid Adjustable Die Head—

Geometric Tool Co., New Haven, Conn., recently placed on the market a style DJ solid adjustable die head designed primarily for cutting short threads where the time required for backing off is not important. This tool, shown herewith, also may be used to advantage on chucking machines and similar equipment where the space in which the die head swings is limited.

Not only does the die head have a short overall length but its outside diameter also is kept as small as is consistent with proper chaser bearing support. Each set of chasers is adjustable for size.

Large screws securely seated in the skeleton on broad seating surfaces hold the size even under rapid reverse. The die head is built in sizes from 5/16 to 6 inches, maximum diameters.

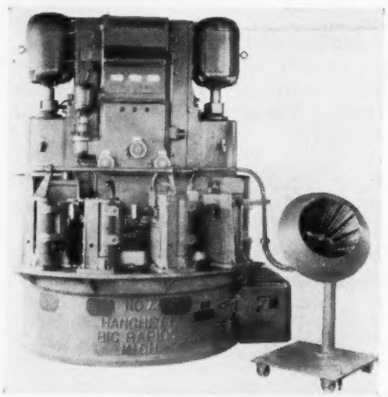


Style DJ Geometric solid adjustable die head for cutting short threads

Rotary Surface Grinder—

Hanchett Mfg. Co., Big Rapids, Mich., recently developed a new No. 72 rotary surface grinder, shown herewith, fitted with automatic means for loading, clamping the work, grinding, and unloading the finish ground parts. The bed carries a circular work table 72 inches in diameter. A variable speed unit provides an infinite number of table speeds ranging from ¾ to 4 revolutions per minute.

The work to be ground passes successively beneath the three grinding wheels, each of which is provided with an automatic sizing control to compensate for wheel wear and gage the size of the work. The first grinding wheel is of No. 20 grain, the second No. 46, and the third No. 120. This combines an assortment of wheels selected for large stock re-



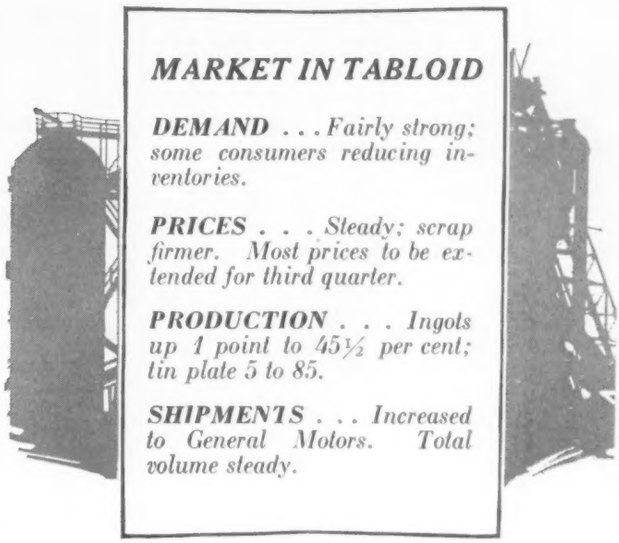
Automaticity characterizes new Hanchett rotary surface grinder

moval and at the same time produce a piece with fine accurate finish.

The parts are shoveled into a Danly hopper feed, by means of which they are fed upwardly through a loader tube, passing into an automatic loader. The fixture which receives these parts is mounted directly on the finished table top and comprises 84 stations, each of which has automatic clamping means. The piece is fed into each station while in motion, and after passing beneath the three grinding wheels and making nearly one complete revolution, it reaches the first ejector mechanism. The piece is ejected upwardly through the tube and passes across into the second loader. This second loading device places the piece, which has now been ground on one end, into a clamping station with the opposite end up and ready for grinding. After one more circuit, this same piece reaches the second ejector mechanism, where it is conveyed through a tube into a suitable container. Production rate of this grinder is 35 complete pieces per minute, or 75 surfaces per minute.

Prices To Be Extended; Steel Rate Up a Point

Wagner Bill Injects More Market Uncertainties, As Motorcar Releases Gain



MARKET IN TABLOID

DEMAND *. . . Fairly strong; some consumers reducing inventories.*

PRICES *. . . Steady; scrap firmer. Most prices to be extended for third quarter.*

PRODUCTION *. . . Ingots up 1 point to 45½ per cent; tin plate 5 to 85.*

SHIPMENTS *. . . Increased to General Motors. Total volume steady.*

IRON and steel markets reflect the steadying influence of labor settlements in the automobile industry, and last week steelworks operations advanced 1 point to 45½ per cent.

Chevrolet and Fisher have released a large proportion of the material recently suspended, automobile assemblies for the week increased about 3000 units to 90,000, and this week full-finished sheet production is scheduled at 60 per cent, up 6 points. Tin plate mills operations have gained 5 points to 85 per cent.

The most significant development in the week was the decision by iron and steel producers to extend prices for third quarter, notwithstanding fresh inflation sentiment, and increased costs due to freight surcharges. This means that there will be no speculative buying this month or in June, such as that which stimulated operations at this time last year.

Of course, what prices eventually prevail for third quarter depends on the fate of NRA and the steel code June 16. The intent in reaffirming prices at this time, apparently, is to stabilize the future markets. Out of the industry's two-year experience with its code there has come a recognizable base of fair prices and practices. Even though the code be abolished, under the laws against unfair trade practices the industry could maintain reasonable control over competition. This is true concerning all coded industries.

Undoubtedly, consumers are adopting a "wait and see" attitude. Necessary requirements are being placed, but the size of orders from many sources is being scaled down, and inventories are being reduced.

Just as labor skies have given evidence of clearing, passage of the Wagner bill by the senate has intensified uncertainties. Of the two measures, the steel industry would much prefer continuation of NRA, as the least disturbing. Early settlement of the eastern shipyard strike, which held up construction of naval vessels, is expected, as steel shipments have been released. The threatened strike at Lake Superior iron ore mines failed to materialize when all the miners continued at work.

Structural shape awards for the week totaled 12,907 tons, including 5000 tons of piling for the Alton, Ill., dam.

Western railroads will spend $19,000,000 this year on air-conditioning passenger cars. Delaware, Lackawanna & Western has awarded 1000 tons of tie plates.

With melters refusing to pay current prices, and dealers declining to cut, the scrap market has the appearance of firmness. To a bona fide consumer demand, rather than inflation fears or labor difficulties, is ascribed the advance of $1 to $3 a ton in nonferrous metals. For the third consecutive week, blast furnace operations in the Pittsburgh district have been increased, another steelworks stack having been lighted.

STEEL's London correspondent cables that in April, first month of Great Britain's experiment with higher duties, iron and steel imports dropped 50 per cent to 62,739 gross tons. As the increases have now been suspended for three months, May should reverse the trend. Exports increased 20 per cent to 210,880 tons. April pig iron output in Great Britain totaled 526,300 tons; steel ingots and castings, 808700, a slight reduction for both.

Pittsburgh district steelworks operations last week rose 2 points to 38 per cent; Detroit 12 to 94; New England 4 to 50; eastern Pennsylvania ½-point to 28½; Buffalo 2 to 32. Wheeling was down 8 to 73; Chicago 1 to 51½. Cleveland was unchanged at 51; Birmingham 54½; Youngstown 50.

STEEL's market price composites are unchanged, iron and steel $32.34; finished steel $54; scrap $10.29.

COMPOSITE MARKET AVERAGES

	May 18	May 11	May 4	One Month Ago April, 1935	Three Months Ago Feb., 1935	One Year Ago May, 1934	Five Years Ago May, 1930
Iron and Steel	$32.34	$32.34	$32.30	$32.29	$32.54	$32.97	$33.49
Finished Steel	54.00	54.00	54.00	54.00	54.00	54.80	52.60
Steelworks Scrap	10.29	10.29	10.00	10.05	12.03	11.30	13.65

Iron and Steel Composite:—Pig iron, scrap, billets, sheet bars, wire rods, tin plate, wire, sheets, plates, shapes, bars, black pipe, rails, alloy steel, hot strip, and cast iron pipe at representative centers. Finished Steel Composite:—Plates, shapes, bars, hot strip, nails, tin plate, pipe. Steelworks Scrap Composite:—Heavy melting steel and compressed sheets.

A COMPARISON OF PRICES

Representative Market Figures for Current Week; Average for Last Month, Three Months and One Year Ago

Finished Material

	May 18, 1935	April, 1935	Feb., 1935	May, 1934
Steel bars, Pittsburgh	1.80c	1.80c	1.80c	1.90c
Steel bars, Chicago	1.85	1.85	1.85	1.95
Steel bars, Philadelphia	2.11	2.09	2.09	2.19
Iron bars, Terre Haute, Ind.....	1.75	1.75	1.75	1.75
Shapes, Pittsburgh	1.80	1.80	1.80	1.85
Shapes, Philadelphia	2.01½	2.00½	2.00½	2.05½
Shapes, Chicago	1.85	1.85	1.85	1.90
Tank plates, Pittsburgh	1.80	1.80	1.80	1.85
Tank plates, Philadelphia	2.00	1.98½	1.98½	2.03½
Tank plates, Chicago	1.85	1.85	1.85	1.90
Sheets, No. 10, hot rolled, Pitts...	1.85	1.85	1.85	2.00
Sheets, No. 24, hot ann., Pitts....	2.40	2.40	2.40	2.65
Sheets, No. 24, galvan., Pitts.....	3.10	3.10	3.10	3.25
Sheets, No. 10, hot rolled, Gary..	1.95	1.95	1.95	2.10
Sheets, No. 24, hot anneal., Gary	2.55	2.55	2.55	2.75
Sheets, No. 24, galvan., Gary.....	3.20	3.20	3.20	3.35
Plain wire, Pittsburgh	2.30	2.30	2.30	2.30
Tin plate, per base box, Pitts.....	5.25	5.25	5.25	5.25
Wire nails, Pittsburgh	2.60	2.60	2.60	2.60

Semifinished Material

Sheet bars, open-hearth, Youngs.	$28.00	$28.00	$28.00	$30.00
Sheet bars, open-hearth, Pitts.....	28.00	28.00	28.00	30.00
Billets, open-hearth, Pittsburgh....	27.00	27.00	27.00	29.00
Wire rods, Pittsburgh	38.00	38.00	38.00	38.00

Pig Iron

	May 18, 1935	April, 1935	Feb., 1935	May, 1934
Bessemer, del. Pittsburgh	$19.81	$19.76	$19.76	$19.76
Basic, Valley	18.00	18.00	18.00	18.00
Basic, eastern, del. eastern Pa.....	19.76	19.76	19.76	19.76
No. 2, foundry, del. Pittsburgh....	19.31	19.26	19.26	19.26
No. 2 foundry, Chicago	18.50	18.50	18.50	18.50
Southern No. 2, Birmingham.....	14.50	14.50	14.50	14.50
No. 2X eastern, del. Philadelphia..	20.68	20.63	20.63	20.63
Malleable, Valley	18.50	18.50	18.50	18.50
Malleable, Chicago	18.50	18.50	18.50	18.50
Lake Superior charcoal, del. Chi.	24.25	24.15	24.04	24.04
Ferromanganese, del. Pittsburgh..	90.13	89.89	89.79	90.24
Gray forge, del. Pittsburgh	18.67	18.63	18.63	18.88

Scrap

Heavy melting steel, Pittsburgh....	$12.00	$11.70	$13.25	$12.80
Heavy melt. steel, No. 2, east. Pa.	9.25	9.15	10.12	8.90
Heavy melting steel, Chicago.....	10.25	10.05	11.65	10.85
Rails for rolling, Chicago	11.00	11.05	12.55	12.15
Railroad steel specialties, Chicago	11.25	11.25	12.50	12.40

Coke

Connellsville, furnace, ovens.....	$3.60	$3.60	$3.60	$3.45
Connellsville, foundry, ovens	4.60	4.60	4.60	4.60
Chicago, by-product foundry, del.	9.25	9.25	9.25	9.25

Steel, Iron, Raw Material, Fuel and Metals Prices

Prices are code levels filed with American Iron and Steel Institute, 350 Fifth avenue, New York. Except when otherwise designated, prices are base, f.o.b. cars. Asterisk denotes price change this week.

Sheet Steel

Hot Rolled No. 10, 24-48 in.

Pittsburgh	1.85c
Gary	1.95c
Chicago, delivered..	1.98c
New York, del.	2.20c
Philadelphia, del.	2.16c
Birmingham	2.00c
St. Louis, del.	2.17c
Pacific ports, f.o.b. cars, dock	2.40c

Hot Rolled Annealed No. 24

Pittsburgh	2.40c
Gary	2.50c
Chicago, delivered..	2.53c
Detroit, delivered....	2.60c
New York, del.	2.75c
Philadelphia, del.	2.71c
Birmingham	2.55c
St. Louis, del.	2.72c
Pacific ports, f.o.b. cars, dock	3.05c

Galvanized No. 24

Pittsburgh	3.10c
Gary	3.20c
Chicago, delivered..	3.23c
Philadelphia, del	3.41c
New York, del.	3.45c
Birmingham	3.25c
St. Louis, del.	3.42c
Pacific ports, f.o.b. cars, dock	3.70c

Tin Mill Black No. 28

Pittsburgh	2.75c
Gary	2.85c
St. Louis, delivered..	3.07c

Cold Rolled No. 10

Pittsburgh	2.50c
Gary	2.60c
Detroit, delivered....	2.70c
Philadelphia, del.	2.81c
New York, del.....	2.85c
Pacific ports, f.o.b. cars, dock	3.10c

Cold Rolled No. 20

Pittsburgh	2.95c
Gary	3.05c
Detroit, delivered....	3.15c
Philadelphia, del.	3.26c
New York, del.	3.30c

Enameling Sheets

Pittsburgh, No. 10..	2.50c
Pittsburgh, No. 20..	3.10c

Tin and Terne Plate

Gary base, 10 cents higher.

Tin plate, coke base con. (box) Pitts...	$5.25
Do., waste-waste..	2.75c
Do., strips	2.50c
Long ternes, No. 24 unassorted, Pitts.	3.40c
Do., Gary	3.50c

Corrosion and Heat-Resistant Alloys

Pittsburgh base, cents per lb.

Chrome-Nickel

	No. 302	No 304
Bars	23.00	24.00
Plates	26.00	28.00
Sheets	33.00	35.00
Hot strip	20.75	22.75
Cold strip	27.00	29.00

Straight Chromes

	No. 410	No. 430	No. 442	No. 446
Bars	17.00	18.50	21.00	26.00
Plates	20.00	21.50	24.00	29.00
Sheets	25.00	28.00	31.00	35.00
Hot strip	15.75	16.75	21.75	26.75
Cold stp...	20.50	22.00	27.00	35.00

Steel Plates

Pittsburgh	1.80c
New York, del.	2.09c
Philadelphia, del.	1.99c
Boston, delivered....	2.22c
Buffalo, delivered....	2.05c
Chicago or Gary.....	1.85c
Cleveland, del.	1.99½c
Birmingham	1.95c
Coatesville, base	1.90c
Sparrows Pt., base	1.90c
Pacific ports, f.o.b. cars, dock	2.35c
St. Louis, delivered	2.07c

Structural Shapes

Pittsburgh	1.80c
Philadelphia, del.	2.01½c
New York, del.	2.06½c
Boston, delivered....	2.20½c
Bethlehem	1.90c
Chicago	1.85c
Cleveland, del.	2.00c
Buffalo	1.90c
Gulf Ports	2.20c
Birmingham	1.95c
Pacific ports, f.o.b. cars, dock	2.35c

Bars

Soft Steel

Pittsburgh	1.80c
Chicago or Gary	1.85c
Duluth	1.95c
Birmingham	1.95c
Cleveland	1.85c
Buffalo	1.90c
Detroit, delivered....	1.95c
Pacific ports, f.o.b. cars, dock	2.35c
Philadelphia, del.	2.11c
Boston, delivered....	2.22c
New York, del.	2.15c
Pitts., forg. qual.....	1.95c-2.05c

Rail Steel

To Manufacturing Trade

Pittsburgh	1.70c
Chicago or Gary	1.75c
Moline, Ill.	1.75c
Cleveland	1.75c
Buffalo	1.80c

Iron

Troy, N. Y.	1.70c
Terre Haute, Ind.	1.75c
Chicago	1.80c
Philadelphia	1.91c
Pittsburgh, refined	2.75-7.50c

Reinforcing

New billet, straight lengths, quoted by distributors.

Pittsburgh	2.05c
Chicago, Gary, Buffalo, Cleve., Birm., Young.	2.10c
Gulf ports	2.45c
Pacific coast ports f.o.b. cars dock	2.45c
Philadelphia, del.	2.36c

Rail Steel

Straight lengths quoted by distributors

Pittsburgh	1.90c
Chicago, Buffalo, Cleveland, Birm., Young.	1.95c
Gulf ports	2.30c

Wire Products

(Prices apply to straight or mixed carloads; pool cars, or less, 15c up. 10% dis. on nail extras on stright or mixed carloads to one consignee.)

Base Pitts.-Cleve. 100 lb. keg.

Standard wire nails	$2.60
Cement coated nails	2.60
Galvanized nails, 15 gage and coarser	4.60c
do., 16 gage and finer	5.10c

(Per pound)

Polished staples	3.30c
Galvanized fence staples	3.55c
Barbed wire, galv.	3.00c
Annealed fence wire	2.45c
Galvanized fence wire	2.80c
Woven wire fencing (base column, c.l.)	$63.00
Plain wire, 6-9 gage to mfg. trade	2.30c

Anderson, Ind., (merchant products only) and Chicago up $1; Duluth up $2; Birmingham up $3.

Spring wire, Pittsburgh or Cleveland	2.90c

Do., Chicago up $1, Worcester, $2.

Cold-Finished Carbon Bars and Shafting

Base Pitts., one size, shape, grade, shipment at one time to one destination

10,000 to 19,999 lbs	1.95c
20,000 to 59,999 lbs.	1.90c
60,000 to 99,999 lbs.	1.85c
100,000 lbs. and over	1.82½c

Gary, Ind., Cleveland, up 5c; Buffalo, up 10c; Detroit, up 20c; eastern Michigan, up 25c.

Alloy Steel Bars (Hot)

Pittsburgh, Buffalo, Chicago, Massillon, Canton, Bethlehem	2.45c

Alloy S.A.E.	Alloy Diff.	Alloy S.A.E.	Alloy Diff.
2000	0.25	3100	0.55
2100	0.55	3200	1.35
2300	1.50	3300	3.80
2500	2.25	3400	3.20

4100 0.15 to 0.25 Mo.....0.50
4600 0.20 to 0.30 Mo. 1.25-1.75 Ni. 1.05
5100 0.80-1.10 Cr.....0.45
5100 Cr. spring.....base
6100 bars 1.20
6100 spring 0.70
Cr., Ni., Van. 1.50
Carbon Van. 0.95
9250.....Carbon base plus extras

Piling

Pittsburgh	2.15c
Chicago, Buffalo	2.25c

Strip and Hoops

Hot strip to 23¾-in. Pittsburgh	1.85c
Chicago, base	1.95c
Birmingham base	2.00c
Detroit, delivered	2.05c
Philadelphia, del.	2.16c
New York, del.	2.20c
Cooperage hoop, Pittsburgh	1.95c
Chicago	2.05c
Cold-rolled strip, Pitts., Cleve.	2.60c
Worcester, Mass.	2.80c

Rails, Track Material

(Gross Tons)

Standard rails, mill	$36.37½
Relay rails, Pitts. 24-45 lbs.	$26.00
50-60 lbs.	$23.00
70-75 lbs.	$20.00
80-85 lbs.	$24.00
100 lbs.	$25.00
Light rails, billet qual. Pitts., Chi.	$35.00
Do., reroll. qual.	34.00
Angle bars, billet, Gary, Ind., So. Chi.	2.55c
Do., axle steel	2.10c
Spikes, R. R. base	2.40c
Track bolts, base	3.55c
Tie plates, base	1.90c

Base, light rails 25 to 40 lbs.; 50 to 60 lbs. inclusive up $5; 16 and 20 lbs., up $1; 12 lbs. up $8; 8 and 10 lbs., up $5. Base railroad spikes 200 kegs or more; base tie plates 20 tons.

Bolts and Nuts

Pittsburgh, Cleveland, Birmingham, Chicago. Discounts to legitimate trade for all case lots, Dec. 1, 1932, lists, 10% extra for less full containers.

Carriage Bolts

All sizes, cut thread	70-10-5 off
Rolled thread, ½ x 6, smaller	70-10-5 off

Machine Bolts

All sizes cut thread lag screws, plow bolts, Nos. 1-2-3-7 heads, tap bolts, blank bolts stud bolts	70-10-5 off
Tire bolts	60-5 off
Stove bolts, 75 off in pkgs.; 83 off on 15,000 of 3-inch and shorter, or 5000 over 3-inch.	
Rolled thread machine, ½ x 6, smaller	70-10-5 off
Step bolts	70-5 off
Elevator bolts	70-5 off

Nuts

S.A.E. semifinished hex.; ½ to ⅞-inch	70-10-5 off
Do., ½ to 1-inch	70-10-5 off
Do., over 1-inch	70-5 off

Hexagon Cap Screws

*Milled	85-10 off
Upset, 1-in., smaller	87½ off

Square Head Set Screws

Upset, 1-in., smaller	80 off
Headless set screws	75 off

Rivets, Wrought Washers

Struc., c. l., Pittsburgh, Cleveland	2.90c
Struc., c. l., Chicago	3.00c
⅞-in. and smaller, Pitts., Chi., Cleve.	70 and 5 off
Wrought washers, Pitts., Chi., Phila., to jobbers & large nut, bolt mfrs.	$6.25 off

Cut Nails

Cut nails, Pitts.; (10% discount on size extras)	$2.75
Do. less carloads, 5 kegs or more no discount on size extras	$3.05
Do. under 5 kegs; no discount on size extras	$3.20

Pipe and Tubing

Base $200 net ton, except on standard commercial seamless boiler tubes under 2 inches and cold drawn seamless tubing.

Welded Iron, Steel Pipe

Base discounts on steel pipe, Pitts., Lorain, O., to consumers in carloads. Gary, Ind., 2 points less. Chicago delivered 2½ points less. Wrought pipe, Pittsburgh base.

Butt Weld

Steel	Blk.	Gal.
¼ and ⅜	53½	35
½	58½	47
¾	62	52
1—3	64	55
Iron		
½	31½	15
¾	36½	20½
1—1¼	39½	25½
2	41½	26

Lap Weld

Steel		
2	60	51
2½—3	63	54
3½—6	65	56
7 and 8	64	54
9 and 10	63½	53½
Iron		
2	37	22½
2½—3½	38	25
4—8	40	28½

Line Pipe

Steel	
½, butt weld	57½
⅛-inch, butt weld	50½
¼—⅜, butt weld	52½
¾, butt weld	61
1—3, butt weld	63
2-inch, lap weld	59
2½—3, lap weld	62
3½—6, lap weld	64
7—8, lap weld	63
Iron	

⅛—1½ inch, black and galv. take 4 pts. over; 2½—6 inch 2 pts. over discounts for same sizes, standard pipe lists, 8—12-inch, no extra.

Boiler Tubes

C. L. Discounts, f.o.b. Pitts.

Lap Weld Steel		*Charcoal Iron*	
2—2¼	33	1¾	8
2½—2¾	40	2—2¼	13
3	47	2½—2¾	16
3¼—3½	50	3	17
4	52	3¼—3½	18
4½—5	42	4	20
		4½	21

In lots of a carload or more, above discounts subject to preferential of two 5% and one 7½% discount on steel and 10% on charcoal iron.

Lapwelded steel: 200 to 9999 pounds, ten points under base, one 5% and one 7½%. Under 2000 pounds 15 points under base, one 5% and one 7½%. Charcoal iron: 10,000 pounds to carloads, base less 5%; under 10,000 lbs., 2 points under base.

Seamless Boiler Tubes

Under date of May 15 in lots of 40,000 pounds or more for cold-drawn boiler tubes and in lots of 40,000 pounds or feet or more for hot-finished boiler tubes, revised prices are quoted for 55 cold-drawn boiler tube sizes ranging from ¼ to 6-inch outside diameter in 30 wall thicknesses, decimal equivalent from 0.035 to 1.000, on a dollars and cents basis per 100 feet and per pound.

Hot-finished carbon steel boiler tube prices also under date of May 15 range from 1 through 7 inches outside diameter, inclusive, and embrace 47 size classifications in 22 decimal wall thicknesses ranging from 0.109 to 1.000, prices also being on a lb. and 100 ft. basis.

Seamless Tubing

Cold drawn; f.o.b. mill disc.

100 ft. or 150 lbs.	32%
15,000 ft. or 22,500 lbs.	70%

Cast Iron Water Pipe

Class B Pipe—Per Net Ton

6-in. & over, Birm.	$39.00-40.00
4-in., Birmingham	42.00-43.00
4-in., Chicago	50.40-51.40
6 to 24-in. Chicago	47.40-48.40
6-in. & over, east fdy.	43.00
Do., 4-in.	46.00

Class A pipe $3 over Class B.
Stnd. fitgs., Birm. base...$100.00

Semifinished Steel

Billets and Blooms

4 x 4-inch base; gross ton

Pitts., Chi., Cleve., and Youngstown	$27.00
Philadelphia	32.67
Duluth	31.00
Forging, Pitts., Chi. and Buffalo	32.00
Forging, Duluth	36.00

Sheet Bars

Pitts., Cleve., Young., Chi., Buff., Canton, Sparrows Pt.	28.00

Slabs

Pitts., Cleve., Young.	27.00

Wire Rods

(Common; combination up $2)

Pitts., Cleveland	38.00
Chicago	39.00
Worcester, Mass.	40.00

Skelp

Pitts., Chi., Young., Buff., Coatesville, Sparrows Point	1.70c

Coke

Price Per Net Ton

Beehive Ovens

Connellsville, fur.	$3.60
Connellsville, fdry.	4.60
Connel. prem. fdry.	5.10
New River fdry.	6.00
Wise county fdry.	4.45- 5.25
Wise county fur.	4.00- 4.50

By-Product Foundry

Newark, N. J., del.	9.20- 9.65
Chi., ov., outside del.	8.50
Chicago, del.	9.25
New England, del.	11.00
St. Louis, del.	9.25
Birmingham, ovens	6.00
Indianapolis, del.	8.75
Cincinnati, del.	9.30
Cleveland, del.	9.25
Buffalo, ovens	7.50- 8.00
Detroit ov., out. del.	8.50
Philadelphia, del.	9.03

Coke By-Products

Per gallon, producers' plants.

	Tank lots	Spot
Pure and 90% benzol	15.00c	
Toluol	30.00c	
Solvent naphtha	30.00c	
Commercial xylol	30.00c	

Per lb. f.o.b. New York.

Phenol (200 lb. drums)	16.30c
Do. (100 lbs.)	17.30c

Eastern Plants, per lb.

Naphthalene flakes and balls, in bbls.	5.00c

Per 100 lb. Atlantic seaboard

Sulphate of ammonia	$1.20

†Western prices, ½-cent up.

Pig Iron

Delivered prices include switching charges only as noted. No. 2 foundry is 1.75-2.25 sil.; 25c diff. for each 0.25 sil. above 2.25; 50c diff. for each 0.25 below 1.75. Gross tons.

Basing Points:	No. 2 Fdry.	Malleable	Basic	Bessemer
Bethlehem, Pa.	$19.50	$20.00	$19.00	$20.50
Birdsboro, Pa.	19.50	20.00	19.00	20.50
Birmingham, Ala., southern del...	14.50	14.50	13.50	19.00
Buffalo	18.50	19.00	17.50	19.50
Chicago	18.50	18.50	18.00	19.00
Cleveland	18.50	18.50	18.00	19.00
Detroit	18.50	18.50	18.00	19.00
Duluth	19.00	19.00	.....	19.50
Erie, Pa.	18.50	19.00	18.00	19.50
Everett, Mass.	19.50	20.00	19.00	20.50
Hamilton, O.	18.50	18.50	18.00	19.00
Jackson, O.	20.25	20.25	19.75	.....
Neville Island, Pa.	18.50	18.50	18.00	19.00
Provo, Utah	17.50	.....	17.00	.....
Sharpsville, Pa.	18.50	18.50	18.00	19.00
Sparrows Point, Md.	19.50	.....	19.00	.....
Swedeland, Pa.	19.50	20.00	19.00	20.50
Toledo, O.	18.50	18.50	18.00	19.00
Youngstown, O.	18.50	18.50	18.00	19.00
Delivered from Basing Points:				
Akron, O., from Cleveland	19.76	19.76	19.26	20.26
Baltimore from Birmingham	20.80	.....	19.96	.....
Boston from Birmingham	19.62	.....	19.50	.....
Boston from Everett, Mass.	20.00	20.50	19.50	21.00
Boston from Buffalo	20.00	20.50	19.50	21.00
Brooklyn, N. Y., from Bethlehem	21.93	22.43	.....	.....
Brooklyn, N. Y., from Bmghm..	21.55	.....	.....	.....
Canton, O., from Cleveland	19.76	19.76	19.26	20.26
Chicago from Birmingham	†18.72	.....	18.60	.....
Cincinnati from Hamilton, O.	19.51	19.51	19.01	.....
Cincinnati from Birmingham	19.38	.....	19.40	.....
Cleveland from Birmingham	19.04	.....	18.92	.....
Indianapolis from Hamilton, O..	20.93	20.93	20.43	21.43
Mansfield, O., from Toledo, O.	20.26	20.26	19.76	20.76
Milwaukee from Chicago	19.57	19.57	19.07	20.07
Muskegon, Mich., from Chicago, Toledo or Detroit	21.60	21.60	21.10	22.10
Newark, N. J., from Birmingham	20.61	.....	.....	.....
Newark, N. J., from Bethlehem..	20.99	21.49	.....	.....
Philadelphia from Birmingham	19.93	.....	19.1	.....
Philadelphia from Swedeland, Pa.	20.31	20.81	19.81	.....
Pittsburgh district from Neville Island	Neville base plus 67c, 81c and $1.21 switching charges			
Saginaw, Mich., from Detroit	20.75	20.75	20.25	20.25

Delivered from Basing Points:	No. 2 Fdry.	Malleable	Basic	Bessemer
St. Louis, northern	19.00	19.00	18.50	.....
St. Louis from Birmingham	†18.62	.....	18.50	.....
St. Paul from Duluth	20.94	20.94	.....	21.44

†Over 0.70 phos.

Low Phos

Basing Points: Birdsboro and Steelton, Pa., and Standish, N. Y., $23.50. Phila. base, standard and copper bearing, $24.63.

Gray Forge

Valley furnace 18.00
Pitts. dist. fur. 18.00

Charcoal

Lake Superior fur. 21.00
Do., del. Chicago 24.25
Lyle, Tenn. 21.50

Silvery†

Jackson County, O., base; 6% $22.75; 7—$23.75; 8—$24.75; 9—$25.70; 10—$26.75; 11—$27.75. Buffalo base prices, up $1.25.

Bessemer Ferrosilicon†

Jackson County, O., base; 10%—$27.75; 11—$28.75; 12—$30.25; 13—$31.75; 14—$33.25; 15—$34.75; 16—$36.25. Buffalo base prices $1.25 higher.

†The lower all-rail delivered price from Jackson, O., or Buffalo is quoted with freight allowed.

Refractories

Per 1000 f.o.b. Works

Fire Clay Brick

First Quality.

Pa., Ill., Ky., Md., Ga., Mo. $45.00
Alabama 45.00

Second Quality

Pa., Ill., Ky., Md., Mo., Ga., Ala..... 40.00

Ohio

First quality $40.00-45.00
Intermediary 37.00
Second quality 28.00

Malleable Bung Brick

All bases 50.00

Silica Brick

Pennsylvania $45.00
Joliet, E. Chicago 54.00
Birmingham, Ala. 52.00

Magnesite

Imported dead-burned grains, net ton f.o.b. Chester, Pa., and Baltimore bases (bags).... $45.00
Domestic dead-burned grains, net ton f.o.b. Chester, Pa., and Baltimore bases (bags).. 40.00
Domestic dead-burned gr. net ton f.o.b. Chewelah, Wash. (bulk).. 22.00

Basic Brick

Net ton, f.o.b. Baltimore, Plymouth Meeting, Chester, Pa.

Chrome brick $45.00
Chemically bonded chrome brick 42.50
Magnesite brick 65.00
Chemically bonded magnesite brick 55.00

Fluorspar, 85-5

Washed gravel, duty paid, tide, net ton $18.75-19.00
Washed gravel, f.o.b. Ill., Ky., net ton, carloads $13.00-14.00

Ferroalloys

Dollars, except Ferrochrome

Ferromanganese, 78-82% tidewater, duty paid 85.00
Do., Balti. base 85.00
Do., del. Pittsburgh 90.13
Spiegeleisen, 19-20% dom. Palmerton, Pa., spot† 26.00
Do., New Orleans 26.00
Ferrosilicon, 50% freight all., cl. 77.50
Do., less carload .. 85.00
Do., 75 per cent .. 126-130.00
Spot, $5 a ton higher.
Silicomang., 2½ carb. 90.00
2% carbon, 95.00; 1%, 105.00
Ferrochrome, 66-70 chromium, 4-6 carbon, cts. lb. con. del. 10.00
Ferrotungsten, stand., lb. cont. del. 1.35- 1.45
Ferrovanadium, 35 to 40% lb., cont., on analysis 2.70- 2.90
Ferrotitanium, c. l., prod. plant, frt. allow., net ton 137.50
Spot, 1 ton, frt. allow., lb. 7.00
do., under 1 ton..... 7.50
Ferrophosphorus, per ton, c. l., 17-19% Rockdale, Tenn., basis, 18%, $2 unitage 50.00
Ferrophosphorus, electrolytic, per ton c. l., 23-26% f.o.b. Anniston, Ala., 24% $2.75 unitage 65.00
Ferromolybdenum, stand. 55-65%, lb. 0.95
Molybdate, lb. cont. 0.80
†Carloads, Quan. diff. apply.

Nonferrous Prices

METAL PRICES OF THE WEEK

Spot unless otherwise specified. Cents per pound

	Copper: Electro, del. Conn.	Copper: Lake, del. Midwest	Copper: Casting, refinery	Straits Tin: New York Spot	Straits Tin: New York Futures	Lead N. Y.	Lead East St. L.	Zinc St. L.	Aluminum 99%	Antimony Chinese Spot, N. Y.	Nickel Cathodes
May 11	9.00	9.12½	7.75	50.65	49.60	3.75	3.60	4.20	*19.00	14.25	35.00
May 13	9.00	9.12½	8.00	50.70	49.62½	3.80	3.65	4.20	*19.00	14.25	35.00
May 14	9.00	9.12½	8.00	50.70	49.65	3.80	3.65	4.20	*19.00	14.25	35.00
May 15	9.00	9.12½	8.00	50.80	49.62½	3.85	3.70	4.25	*19.00	14.25	35.00
May 16	9.00	9.12½	8.00	51.12½	49.85	3.90	3.75	4.25	*19.00	14.25	35.00
May 17	9.00	9.12½	8.00	51.50	50.25	3.90	3.75	4.25	*19.00	14.25	35.00

*Nominal range 19.00 to 21.00c.

MILL PRODUCTS

F.o.b. mill base, cents per lb. except as specified. Copper, brass products based on 9.00c Conn. copper.

Sheets

Yellow brass (high) 14.25
Copper, hot rolled.... 16.00
Lead, cut, to jobbers 7.50
Zinc, 100-lb. base..... 9.50

Tubes and Pipes

High yellow brass... 16.00
Seamless copper 16.25

Rods

High yellow brass.... 12.75
Copper, hot rolled 13.25

Anodes

Copper, untrimmed.. 13.75

Wire

Yellow brass (high) 14.75

OLD METALS

Deal. buying prices, cents lb.

No. 1 Composition Red Brass

New York 4.50- 4.75
Cleveland 5.25- 5.50
*Chicago 4.75- 5.00
St. Louis 5.00- 5.25

Heavy Copper and Wire

*New York, No. 1.. 6.00- 6.25
*Chicago, No. 1.....5.87½-6.12½
Cleveland 5.75- 6.00
St. Louis, No. 1 ..... 6.25- 6.50

Composition Brass Borings

New York 4.00- 4.25

Light Copper

New York 4.75- 5.00
Chicago 4.37½-4.62½
Cleveland 4.75- 5.25
St. Louis 5.00- 5.25

Light Brass

*Chicago 2.37½-2.62½
Cleveland 2.75- 3.00
St. Louis 2.75- 3.00

Lead

*New York 2.87½-3.12½
Cleveland 2.75- 3.00
Chicago 2.75- 3.00
*St. Louis 3.10- 3.20

Zinc

*New York 2.12½-2.37½
Cleveland 2.00- 2.25
St. Louis 2.50- 2.65

Aluminum

Borings, Cleveland.. 8.00- 8.25
Mixed, cast, Clev.... 12.25-12.75
*Mixed, cast, St. L. 13.00-13.25
Clips, soft, Clev..... 14.00-14.50

SECONDARY METALS

Brass ingot, 85-5-5-5 8.00
Stand No. 12 Alum. 16.00-17.00

Iron and Steel Scrap Prices

Corrected to Friday night Gross tons delivered to consumers, except where otherwise stated

HEAVY MELTING STEEL

Birmingham	8.50- 9.00
Boston, dock, expt...	8.50
Boston, domestic	7.00- 7.25
Buffalo, No. 1	10.00-10.50
Buffalo, No. 2	8.25- 8.50
Chicago, No. 1	10.00-10.50
Cleveland, No. 1	9.00- 9.50
Cleveland, No. 2	8.50- 9.00
Detroit, No. 1	7.50- 8.00
Detroit, No. 2	6.50- 7.00
Eastern Pa., No. 1..	10.50
Eastern Pa., No. 2..	9.00- 9.50
Federal, Ill.	8.00- 8.50
Granite City, R. R.	8.25- 8.75
Granite City, No. 2..	7.25- 7.75
N. Y., deal, No. 2....	7.00
N. Y., deal. barge....	8.50
Pittsburgh, No. 1....	11.75-12.25
Pittsburgh, No. 2....	10.50-11.00
St. Louis	7.25- 7.75
Valleys, No. 1	11.50-11.75

COMPRESSED SHEETS

Buffalo, dealers	8.25- 8.50
Chicago. factory	8.50- 9.00
Chicago, dealer	7.50- 8.00
Cleveland	8.00- 8.50
Detroit	7.75- 8.25
E. Pa., new mat.....	9.50
Pittsburgh	11.50-12.00
St. Louis	6.25- 6.75
Valleys	10.50

BUNDLED SHEETS

Buffalo	6.50- 7.00
Cincinnati, del.	6.00- 6.50
Cleveland	6.00- 6.50
Pittsburgh	10.50-11.00
St. Louis	4.50- 5.00

SHEET CLIPPINGS, LOOSE

Chicago	5.50- 6.00
Cincinnati	5.50- 6.00
Detroit	5.00- 5.50
St. Louis	4.25- 4.75

STEEL RAILS, SHORT

Birmingham	11.50-12.00
Buffalo	11.50-12.00
Chicago (3 ft.)	12.00-12.50
Chicago (2 ft.)	12.50-13.00
Cincinnati, del.	11.00-11.50
Detroit	9.50-10.00
Pitts., open-hearth, 3 ft. and less	14.50-15.00
St. Louis, 2 ft.& less	12.00-12.50

STEEL RAILS, SCRAP

Boston	7.00- 7.25
Chicago	10.00-10.50
Pittsburgh	12.25-12.75
St. Louis	9.50-10.00

STOVE PLATE

Birmingham	5.75- 6.25
Boston, dealers	3.75- 4.00
Buffalo	9.00- 9.50
Chicago, net	6.00- 6.50
Cincinnati, dealers..	5.50- 6.00
Detroit, net	5.75- 6.25
Eastern Pa.	8.00
N. Y., deal. fdry.	6.00
St. Louis	5.50- 6.00

COUPLERS, SPRINGS

Buffalo	12.75-13.25
Chicago, springs	11.00-11.50
Eastern Pa.	13.50
Pittsburgh	14.50-15.00
St. Louis	8.50- 9.00

ANGLE BARS—STEEL

Chicago	11.00-11.50
St. Louis	9.50-10.00

RAILROAD SPECIALTIES

Chicago	11.00-11.50

LOW PHOSPHORUS

Buffalo, billets and bloom crops	12.00-12.50
Cleveland, billet, bloom crops	14.00-14.50
Eastern Pa., crops..	13.00-14.00
Pittsburgh, billet, bloom crops	15.50-16.00
Pittsburgh, sheet bar crops	14.00-14.50

FROGS, SWITCHES

Chicago	9.75-10.00
St. Louis, cut	9.50-10.00

SHOVELING STEEL

Chicago	10.00-10.50
Federal, Ill.	7.50- 8.00
Granite City, Ill	7.75- 8.25

RAILROAD WROUGHT

Birmingham	7.50- 8.00
Boston, dealers	6.00- 6.50
Buffalo, No. 1	8.25- 8.50
Buffalo, No. 2	10.00-10.50
Chicago, No. 1, net..	8.50- 9.00
Chicago, No. 2	10.00-10.50
Cincinnati, No. 2....	7.50- 8.00
Eastern Pa.	10.50
N. Y., No. 1, deal....	7.25- 7.75
St. Louis, No. 1	6.50- 7.00
St. Louis, No. 2	8.00- 8.50

SPECIFICATION PIPE

Boston	3.00- 3.25
Eastern Pa.	9.00- 9.50
New York, dealers..	3.50- 4.00

BUSHELING

Buffalo, No. 1	8.25- 8.50
Chicago, No. 1	8.50- 9.00
Cinci., No. 1, deal....	6.00- 6.50
Cincinnati, No. 2....	2.75- 3.25
Cleveland, No. 2	6.00- 6.50
Detroit, No. 1, new..	6.50- 7.00
Valleys, new, No. 1	10.50

MACHINE TURNINGS

Birmingham	3.50- 4.00
Boston, dealers	1.75- 2.00
Buffalo	4.50- 5.00
Chicago	5.00- 5.50
Cincinnati, dealers..	3.50- 4.00
Cleveland	5.00- 5.50
Detroit	3.75- 4.25
Eastern Pa.	6.00- 6.50
New York, dealers..	2.00- 2.25
Pittsburgh	8.00- 8.50
St. Louis	2.25- 2.75
Valleys	8.00- 8.25

BORINGS AND TURNINGS

For Blast Furnace Use

Boston, dealers	3.25- 3.50
Buffalo	5.75- 6.25
Cincinnati, dealers..	4.50- 5.00
Cleveland	6.00- 6.50
Detroit	4.75- 5.25
Eastern Pa.	5.00
New York, dealers..	1.50- 1.75
Pittsburgh	6.00- 6.50

CAST IRON BORINGS

Birmingham, plain..	3.50- 4.00
Boston, chemical.....	5.50- 6.50
Boston, dealers	3.25- 3.50
Buffalo	5.75- 6.25
Chicago	5.00- 5.50
Cincinnati, dealers..	3.50- 4.00
Cleveland	6.50- 7.00
Detroit	4.50- 5.00
E. Pa., chemical.....	11.00-12.00
New York, dealers..	1.50- 1.75
St. Louis	2.00- 2.50

PIPE AND FLUES

Cincinnati, dealers..	5.00- 5.50

RAILROAD GRATE BARS

Buffalo	7.00- 7.50
Chicago, net	6.00- 6.50
Cincinnati	4.00- 4.50
Eastern Pa.	8.00
New York, dealers..	4.00- 4.50
St. Louis	4.50- 5.00

FORGE FLASHINGS

Boston, dealers	4.75- 5.00
Buffalo	8.50- 9.00
Cleveland	8.00- 8.50
Detroit	6.75- 7.25
Pittsburgh	10.50-11.00

FORGE SCRAP

Boston, dealers	4.50- 4.75
Chicago, heavy	10.50-11.00
Eastern Pa.	9.50-10.00

ARCH BARS, TRANSOMS

St. Louis	10.00-10.50

AXLE TURNINGS

Boston, dealers	3.00- 3.50
Buffalo	7.50- 8.00
Chicago, elec. fur....	9.50-10.00
Cleveland	7.00- 7.50
Eastern Pa.	9.00
St. Louis	7.00- 7.50

STEEL CAR AXLES

Birmingham	12.00-12.50
Boston, ship. point..	10.00-10.50
Buffalo	12.00-12.50
Chicago, net	13.50-14.00
Eastern Pa.	16.00
St. Louis	12.00-12.50

SHAFTING

Boston, ship. point..	11.75-12.00
Eastern Pa.	16.50
New York dealers..	12.00-12.50
St. Louis	11.00-11.50

CAR WHEELS

Birmingham	8.50- 9.00
Boston, iron deal.....	5.25- 5.50
Buffalo, iron	11.00-11.50
Buffalo, steel	12.00-12.50
Chicago, iron	10.50-11.00
Chicago. rolled steel	10.50-11.00
Cincinnati, iron	8.00- 8.50
Eastern Pa., iron....	11.00
Eastern Pa., steel....	13.50
Pittsburgh, iron.....	12.50-13.00
Pittsburgh, steel.....	14.50-15.00
St. Louis, iron	7.50- 8.00
St. Louis, steel	10.00-10.50

NO. 1 CAST SCRAP

Birmingham	8.50- 9.00
Boston, No. 1 mach.	8.50- 9.00
Boston, No. 2	7.50- 8.00
Boston, tex. con.	8.50- 9.00
Buffalo, cupola	10.50-11.00
Buffalo, mach.	10.25-10.75
Chicago, agri. net....	8.00- 8.50
Chicago, auto	9.00- 9.50
Chicago, mach. net..	9.00- 9.50
Chicago. railr'd net	8.00- 8.50
Cinci., mach. cup.....	8.50 9.00
Cleveland, cupola	11.50-12.00
Detroit, net	9.50-10.00
Eastern Pa., cupola	11.00-12.00
E. Pa.,mixed yard..	8.50- 9.50
Pittsburgh, cupola..	12.75-13.25
San Francisco, del..	13.50-14.00
Seattle	7.00- 8.50
St. Louis, No. 1	8.00- 8.50
St. L., No. 1 mach..	9.00- 9.50

HEAVY CAST

Boston, del.	5.00- 5.25
Buffalo, break.	8.00- 8.50
Cleveland, break.	7.50- 8.00
Detroit, No. 1, mach. net.	10.00-10.50
Detroit, break.	7.00- 7.50
Detroit, auto net....	10.00-10.50
Eastern Pa.	10.50
N. Y., break. deal....	5.75- 6.00
Pittsburgh	11.75-12.25

MALLEABLE

Birmingham, R. R.	9.00-10.00
Boston, consum.	12.00-12.50
Buffalo	12.00-12.50
Chicago, R. R.	12.50-13.00
Cincinnati, agri. del.	8.25- 8.75
Cleveland, rail	12.00-12.50
Detroit, auto	10.00-10.50
St. Louis, R. R.	10.50-11.00
Eastern Pa., R. R....	11.00-11.50

RAILS FOR ROLLING

5 feet and over

Birmingham	10 00-10.50
Boston, dealers	8.00- 8.50
Buffalo	10.00-11.00
Chicago	10.75-11.25
Eastern Pa.	12.50-13.00
New York, dealer	7.50- 8.00
St. Louis	10.00-10.50

LOCOMOTIVE TIRES

Chicago (cut)	11.00-11.50
St. Louis, No. 1	9.00- 9.50

LOW PHOS. PUNCHINGS

Buffalo	12.00-12.50
Chicago	11.50-12.00
Eastern Pa.	13.00-14.00
Pittsburgh (heavy)	13.50-14.00
Pittsburgh (light)..	13.00-13.50

Iron Ore

Lake Superior Ore

Gross ton, 51½% Lower Lake Ports

Old range bessemer	$4.80
Mesabi nonbess.	4.50
High phosphorus	4.40
Mesabi bessemer	4.65
Old range nonbess.	4.65

Eastern Local Ores

Cents, unit, del. E. Pa.

Foundry and basic 56-63% con. (nom.)	8.00- 9.00
Cop.-free low phos. 58-60% (nom.)	10.00-10.50

Foreign Ore

Cents per unit, f.a.s. Atlantic ports (nominal)

Foreign manganiferous ore, 45.55% iron, 6-10% man.	10.00
No. Afr. low phos....	10.00
Swedish basic, 65%	9.00
Swedish low phos...	10.00
Spanish No. Africa basic, 50 to 60%....	9.00
Tungsten, spot, sh. ton unit, duty pd..	$17.75-18.25
N. F. fdy., 55%.....	7.00
Chrome ore, 48% gross ton, c.i.f.....	$18.00-19.50

Manganese Ore

(Nominal)

Prices not including duty, cents per unit cargo lots.

Caucasian, 52-55%..	26.00
So. African, 52%.....	26.00
So. Afr., 49-51%	24.00
Indian, 58-60%	nominal
Indian, 48-50%	nominal

Warehouse Iron and Steel Prices

Cents per pound for delivery within metropolitan districts of cities specified

STEEL BARS	
Baltimore*	2.90c
Boston††	3.00c
Buffalo	3.00c
Chattanooga	3.31c
Chicago	2.95c
Cincinnati	3.17c
Cleveland	2.95c
Detroit	3.04c
Houston	3.00c
Los Angeles	3.60c
Milwaukee	3.06c
New Orleans	3.30c
New York‡(d)	3.22c
Pittsburgh (h)	2.90c
Philadelphia*	2.93c
San Francisco	3.60c
Seattle	3.60c
St. Louis	3.19c
St. Paul	3.00c
Tulsa	3.25c
IRON BARS	
Portland	3.40c
Chattanooga	3.31c
Baltimore*	3.00c
Chicago	2.75c
Cincinnati	3.17c
New York‡(d)	3.32c
Philadelphia*	2.93c
St. Louis	3.19c
Tulsa	3.25c
REINFORCING BARS	
Buffalo	2.60c
Chattanooga	3.31c
Chicago	2.10c-2.60c
Cleveland (c)	2.10c
Cincinnati	3.25c
Houston	3.25c
Los Ang., cl.	2.45c
New Orleans	3.50c
Pitts., plain (h)	3.05c
Pitts., twisted squares (h)	3.175c
San Francisco	2.45c
Seattle	2.45c
St. Louis	3.24c
Tulsa	3.25c
Young.	2.30c-2.60c
SHAPES	
Baltimore*	2.95c
Boston††	3.20c
Buffalo	3.25c
Chattanooga	3.56c
Chicago	3.20c
Cincinnati	3.42c
Cleveland	3.31c
Detroit	3.42c
Houston	3.00c
Los Angeles	3.60c
Milwaukee	3.31c
New Orleans	3.55c
New York(d)	3.37c
Philadelphia*	2.98c
Pittsburgh(h)	3.15c
Portland	3.55c
San Francisco	3.55c
Seattle	3.55c
St. Louis	3.44c
St. Paul	3.25c
Tulsa	3.50c
PLATES	
Baltimore*	2.95c
Boston††	3.21c
Buffalo	3.37c
Chattanooga	3.56c
Chicago	3.20c
Cincinnati	3.42c
Cleveland, ¼-in. and over	3.31c
Detroit	3.42c
Detroit, ⅜-in.	3.65 c
Houston	3.00c
Los Angeles	3.60c
Milwaukee	3.31c
New Orleans	3.55c
New York(d)	3.40c
Philadelphia*	2.98c
Phila. floor	4.95c
Pittsburgh(h)	3.15c
Portland	3.55c
San Francisco	3.55c
Seattle	3.55c
St. Louis	3.44c
St. Paul	3.25c
Tulsa	3.50c
NO. 10 BLUE	
Baltimore*	3.05c
Boston††	3.30c
Buffalo	3.62c
Chattanooga	3.36c
Chicago	3.05c
Cincinnati	3.22c
Cleveland	3.11c
Det., 8-10 ga.	3.14c
Houston	3.35c
Los Angeles	3.70c
Milwaukee	3.16c
New Orleans	3.55c
New York	3.27c
Portland	3.75c
Philadelphia*	3.08c
Pittsburgh(h)	2.95c
San Francisco	3.75c
Seattle	3.75c
St. Louis	3.29c
St. Paul	3.45c
Tulsa	3.70c
NO. 24 BLACK	
Baltimore*†	3.51c
Boston (g)	3.95c
Buffalo	3.25c
Chattanooga	4.21c
Chicago	3.85c
Cincinnati	4.07c
Cleveland	3.91c
Detroit	3.94c
Los Angeles	4.35c
Milwaukee	3.96c
New York	3.85c
Philadelphia*†	3.60c
Pitts.** (h)	3.55c
Portland	4.40c
San Francisco	4.40c
Seattle	4.40c
St. Louis	4.09c
St. Paul	3.695c
Tulsa	4.75c
NO. 24 GALV. SHEETS	
Baltimore*†	4.21c
Buffalo	4.00c
Boston (g)	4.65c
Chattanooga	4.86c
Chicago (h)	4.55c
Cincinnati	4.72c
Cleveland	4.61c
Detroit	4.72c
Houston	4.40c
Los Angeles	4.95c
Milwaukee	4.66c
New Orleans	4.50c
New York	4.50c
Philadelphia*†	4.30c
Pitts** (h)	4.15-4.45c
Portland	5.00c
San Francisco	5.00c
Seattle	5.00c
St. Louis	4.79c
St. Paul	4.19c
Tulsa	5.10c
BANDS	
Baltimore*	3.15c
Boston††	3.30c
Buffalo	3.42c
Chattanooga	3.61c
Chicago	3.30c
Cincinnati	3.47c
Cleveland	3.36c
Detroit, ⅜-in. and lighter	3.39c
Houston	3.25c
Los Angeles	4.10c
Milwaukee	3.41c
New Orleans	3.95c
New York(d)	3.52c
Philadelphia	3.18c
Pittsburgh(h)	3.20c
Portland	4.25c
San Francisco	4.25c
Seattle	4.25c
St. Louis	3.54c
St. Paul	3.20c
Tulsa	3.45c
HOOPS	
Baltimore	2.30c
Boston	4.30c
Buffalo	3.42c
Chicago	3.30c
Cincinnati	3.47c
Det., No. 14 and lighter	3.39c
Los Angeles	5.85c
Milwaukee	3.41c
New York	3.52c
Philadelphia	3.43c
Pittsburgh(h)	3.70c
Portland	5.60c
San Francisco	6.15c
Seattle	5.60c
St. Louis	3.54c
St. Paul	3.75c
COLD FIN. STEEL	
Baltimore (c)	3.56c
Boston	3.75c-3.90c
Buffalo (h)	3.40c
Chattanooga*	3.98c
Chicago (h)	3.35c
Cincinnati	3.57c
Cleveland (h)	3.35c
Detroit	3.49c
Los. Ang.(f) (d)	5.70c
Milwaukee	3.46c
New Orleans	4.15c
New York	3.77c-4.27c
Philadelphia	3.61c
Pittsburgh	3.20c
Portland (f)	5.85c
San Fran.(f) (d)	5.80c
Seattle (f) (d)	5.85c
St. Louis	3.59c
St. Paul	3.05c
Tulsa	4.50c
COLD ROLLED STRIP	
Boston, 0.100-in., 500 lb. lots	5.35c
Buffalo	3.39c
Chicago	3.27c
Cincinnati (b)	3.44c
Cleveland (b)	3.20c
Detroit	3.33c
New York	4.70c
St. Louis	3.36c

TOOL STEELS

(Applying on or east of Mississippi river; west of Mississippi 1c up)

	Base
High speed	57c
High carbon, high chrome	37c
Oil hardening	22c
Special tool	20c
Extra tool	17c
Regular tool	14c

Uniform extras apply

BOLTS AND NUTS

(100 pounds or over)

	Discount
Chicago (a)	70
Cleveland	70
Detroit	70–5
Milwaukee	70
Pittsburgh	70

(a) Under 100 pounds, 65 off.

(b) Plus straightening, cutting and quantity differentials; (c) Plus mill, size and quantity extras; (d) Minus quant. diff.; (e) New mill classif.; (f) Rounds only; (g) 50 bundles or over; (h) Outside delivery, 10c less.

‡Domestic bars; *Plus quan. extras; **Under 25 bundles; *†50 or more bundles; †New extras apply; ††Base 40,000 lbs., extras on less.

Prices on heavier lines are subject to new quantity differentials; 399 lbs. and less, up 50 cts.; 400 to 9999 lbs., base; 10,000 to 19,999 lbs., 15 cts. under; 20,000 to 39,999 lbs., 25 cts. under; 40,000 lbs. and over, 35 cts. under base.

Current Iron and Steel Prices of Europe

Dollars at Rates of Exchange, May 16

Export Prices f. o. b. Ship at Port of Dispatch—By Cable (or Radio)

	British gross tons U. K. ports £ s d	Continental Channel or North Sea ports, metric tons Quoted in dollars at current value	**Quoted in gold pounds sterling £ s d
PIG IRON			
Foundry, 2.50-3.00 Silicon	$15.31 3 2 6	$13.83	1 14 0
Basic bessemer	15.31 3 2 6*	13.01	1 12 0
Hematite, Phos. .03-.05	15.44 3 3 0	.....	.....
SEMIFINISHED STEEL			
Billets	$26.95 5 10 0	$19.12	2 7 0
Wire rods, No. 5 gage	41.65 8 10 0	36.61	4 10 0
FINISHED STEEL			
Standard rails	$37.98 7 15 0	$44.74	5 10 0
Merchant bars	1.64c 7 10 0	1.15c to 1.20c	3 2 6 to 3 5 0
Structural shapes	1.62c 7 7 6	1.14c	3 1 6
Plates, †¼ in. or 5 mm.	1.75c 8 0 0	1.52c	4 2 6
Sheets, black, 24 gage or 0.5 mm.	2.03c 9 5 0	2.14c	5 16 0††
Sheets, gal., 24 gage, corr.	2.46c 11 5 0	3.31c	9 0 0
Bands and strips	1.86c 8 10 0	1.47c	4 0 0
Plain wire, base	2.03c 9 5 0	1.97c	5 7 6
Galvanized wire, base	2.35c 10 15 0	2.30c to 2.34c	6 5 6 to 6 7 6
Wire nails, base	2.63c 12 0 0	2.12c	5 15 0
Tin plate, box 108 lbs.	$ 4.41 0 18 2	.....	.....

British ferromanganese $85 delivered Atlantic seaboard, duty-paid. German ferromanganese £9 0s 0d $(43.74) f.o.b.

Domestic Prices at Works or Furnace—Last Reported

	£ s d		French Francs		Belgian Francs		Reich Marks
Fdy. pig iron, Si. 2.5	$16.54	3 7 6(a)	$17.13	260	$12.51	370 $25.34	63
Basic bessemer pig iron	16.54	3 7 6(a)*	12.19	185	11.15	330 27.96	69.50†
Furnace coke	4.04	0 16 6	7.91	120	3.73	110 7.64	19
Billets	26.95	5 10 0	28.34	430	18.31	540 38.82	96.50
Standard rails	1.81c	8 5 0	2.08c	694	1.65c	1,100 2.40c	132
Merchant bars	1.88c	8 12 0	1.68c	560	.90c	600 2.00c	110
Structural shapes	1.92c	8 15 0	1.65c	550	.90c	600 1.96c	107.50
Plates, †¼-in. or 5 mm.	1.98c	9 1 3	2.10c	700	1.13c	750 2.31c	127
Sheets, black	2.30c	10 10 0§	2.55c	850‡	1.24c	825‡ 2.62c	144‡
Sheets, galv., corr., 24 ga. or 0.5 mm.	2.86c	13 0 0	4.05c	1,350	2.25c	1,500 6.73c	370
Plain wire	2.03c	9 5 0	3.39c	1,130	1.65c	1,100 3.15c	173
Bands and strips	2.05c	9 7 0	1.95c	650	1.26c	840 2.31c	127

*Basic. †British ship-plates. Continental, bridge plates. §24 ga. ‡1 to 3 mm. basic price British quotations are for basic open-hearth steel. Continental usually for basic-bessemer steel a del. Middlesbrough. b hematite. ††Close annealed

**Gold pound sterling carries a premium of 67 per cent over paper sterling.

Bars

Bar Prices, Page 66

Pittsburgh—The price of carbon steel bars, currently 1.80c Pittsburgh, and alloy steel bars, 2.45c, base Pittsburgh, is about to be extended unchanged for application on third quarter business. This will represent the fourth consecutive quarterly extension of bar prices at an unchanged level, the last revision having been late in June, 1934, when a contemplated $3 a ton advance was quickly offset by a $2 a ton reduction. Through last week the release of bar specifications from Chevrolet Motor Co. was an encouraging development in the bar market.

Cleveland — Settlement of the Chevrolet and Fisher Body strikes has been followed by release of a large tonnage of finished steel, including plain carbon and alloy steel bars, for immediate shipment. Specifications from other automobile manufacturers and miscellaneous users during the week were down moderately. Intrastate freight rates from this basing point, effective June 1, will be advanced 7 per cent, conforming with the interstate surcharges, as a result of the conference between the interstate commerce commission, Ohio public utilities commission and railroad representatives in Columbus, O., last week.

Chicago—Despite further decrease in steel bar sales and specifications, the outlook has been improved moderately by settlement of automotive strikes at eastern points. Labor troubles still affect operations of some farm implement plants in the Middle West, but this industry generally continues to operate at a favorable rate, tractor manufacturers particularly. Bar consumption among miscellaneous industries is steady. No change is anticipated in bar prices for third quarter.

Boston—Aggregate volume is light with cold-finished and forging bars the most active groups. Number of release orders hold fairly well, but these are individualy small as consumers are buying close to needs.

New York—Buying of steel bars is light, with jobbers, bolt and nut manufacturers and railroads specifying slowly. Prices are unchanged at 5.15c, New York.

Effective May 25 an initial quotation of 3.90c on single refined bars will be applied at Creighton, Pa.

Philadelphia — Consumption of steel bars by machinery and agricultural implement manufacturers is heavy, some of the latter having the best business in ten years.

Sullivan Machinery Co. has moved its general offices from 400 North Michigan avenue, Chicago, to the Bell building, 307 North Michigan avenue.

Plates

Plate Prices, Page 66

Pittsburgh—The plate market, continuing fairly firm at 1.80c, base Pittsburgh, is likely to carry over on the same level for third quarter. Several private barge inquiries are still considered promising, including those of the American Oil Co. and others locally, but no contract developments have occurred.

Cleveland — Plate specifications were in lighter volume during the week, and mill schedules here were off to 25 per cent. Toledo, O., awarded a small welded pipe line contract to the American Corrugated Pipe Co., which will take about 120 tons of plates.

Chicago—Miscellaneous tank work is taking slightly larger lots of plates, though this work still is relatively quiet. Plate demand from railroads and equipment builders remains slow, with no improvement in early prospect. Releases against building contracts are heavier but are not matched by new business.

Boston—New projects requiring plates are few and orders are generally confined to small lots for miscellaneous needs. A 100-ton standpipe at Sterling, Mass., has been placed. Boiler shops and small tank builders have little work on books. Plates are 2.22c, Boston.

New York—Demand for steel plates has subsided and leaves the market dull, with prices unchanged.

Philadelphia—Dullness prevails in plates, further accentuated by suspension in shipments to the New York Shipbuilding Co., Camden, where a strike of about 4500 men is in progress. Indicating that an early settlement of the strike at Camden is contemplated, is the understanding that the company is still releasing some specifications for rolling, although holding up shipments. Quantity extras on plates, and also on shapes, have again been suspended for three months, now scheduled to become effective Sept. 1 on sales for shipment after the end of that month. As these extras have now been suspended at least four times, many in the trade believe they will eventually be postponed indefinitely. The increased extras on floor plates which were approved by the code authority last year, but which never became effective by virtue of official suspension, have been rescinded, with the original quantity extras on floor plates to be continued. The current market is 1.90c, Coatesville, or 1.99c, Philadelphia.

Birmingham, Ala.—Plate demand is steady and promising. Federal projects indicate greater requirements.

Seattle—While several projects calling for plates are contemplated in this area, they are not definitely up for figures. During the last month demand for light gages has increased, due to service station projects, boiler and ship repair jobs.

Contracts Placed

1375 tons, four 93,000-barrel tanks, Tremley Point, N. J., to Chicago Bridge & Iron Works, Chicago.

120 tons, welded steel pipe, Toledo, O., to American Corrugated Pipe Co.

Unstated tonnage, water tank tower, Brownsville, Tex., to Mosher Steel Co., Houston, Tex., $8106.

Contracts Pending

Tonnage unstated, six 40-foot steel launches; bids May 31 to United States engineer, 819 City National Bank building, Omaha.

Sheets

Sheet Prices, Page 66

Pittsburgh — Shipping suspensions issued by leading automobile manufacturers lifted last week, with disappearance of labor troubles. Although operations in the full-finished branch of the industry dropped 5 points to 54 per cent, an advance to around 60 per cent is forecast for this week. Production of common black and galvanized sheets are unchanged. A moderate slowing in sheet specifications is noticeable. Orders apear to be as numerous and from as many industries as recently, but buyers are scaling down their requirements and none is operating with larger inventories. There appears to be no major price change in prospect for third quarter.

Cleveland—Settlement of Chevrolet and Fisher Body strikes released a large tonnage of sheets to mills last week. Although the strike at Newton Steel Co.'s Monroe, Mich., sheet mills was settled two weeks ago, the plant remained practicaly idle last week. Production is expected in good volume this week. The Cleveland sheet mill operated at 50 per cent. Miscellaneous sheet business holds at a fairly high level.

Chicago—Settlement of automotive labor troubles has aided the outlook in the sheet market and with steady demand appearing from miscellaneous consumers, new business and shipments hold at their recent rates. A definite decrease, however, is noted compared with the activity of 30 to

60 days ago. Filing of third quarter prices this week is expected to see a continuation of current levels.

Boston—Sheet buying is spotty with industrial demand showing little change. Consumer stocks are not large. Some of the larger users have with-held orders awaiting third-quarter price announcements.

New York—Sheet tonnage is fairly steady, but with construction work still lagging volume is well below normal for this time of the year.

Philadelphia—Sheet business holds fairly steady, although demand for galvanized sheets for building has proved disappointing to sellers. Much interest is being centered in the shelving requirements for the proposed Library of Congress addition in Washington, on which general contractors bids were opened May 15. Estimates vary, although in some responsible quarters the sheet requirements are placed as high as 2800 tons—2000 tons of 3/16-inch material, and 800 of lighter gages.

Buffalo—Buffalo district sheet mills are operating at 75 per cent, and this rate will continue for the rest of this month.

Cincinnati—Production schedules are steady, with orders from diversified sources well maintained. New buying is close to immediate needs.

St. Louis — A prolonged spell of rainy weather has slowed down the movement of galvanized roofing to the rural areas. Both the mills and jobbers reports some requests for delayed deliveries.

Birmingham, Ala.—Sheet mills in this district continue active, for the longest period on record, though maximum output is not being sought. Shipments are steady.

Transportation

Track Material Prices, Page 67

Rail inquiry is light and little track material is likely to be purchased in the next few months. Delaware, Lackawanna & Western has placed 1000 tons of tie plates with a Pittsburg mill. Rolling of the Erie's 17,380-ton order for rails is being started, though delivery is extended over three months.

Relocation of track in connection with the Beach City reservoir district in Ohio will provide an outlet for considerable tonnage of rails and other forms of steel. Bids will be taken June 4 by the United States engineer at Zanesville, O., for relocation of 9000 feet of main and 4000 feet of sidetrack for the Pennsylvania and June 26 for relocation of 49,000 feet of main and 4500 feet of sidetrack for the Wheeling and Lake Erie, both for this project.

Chicago & Western Illinois has placed a 600-horsepower diesel switching locomotive with the American Locomotive Co., New York.

Bids on three alternate lots of up to 500 street cars submitted to the Brooklyn & Queens Transit Co., New York, probably will be rejected and new bids on bodies only may be asked.

Locomotives Placed

Chicago & Illinois Western, one 600-horsepower diesel electric locomotive, to American Locomotive Co., New York.

Pipe

Pipe Prices, Page 67

New York—While New York city is planning additional purchases, cast iron pipe demand continues sluggish for this season. Bayonne, N. J. has placed 950 tons and Buffalo, N. Y., has awarded a substantial tonnage. Yonkers, N. Y. will take new bids on several hundred tons, quotations recently being rejected. A $4 reduction on a minor classification of mechanical tubing became effective at Pittsburgh recently. The classification is described as electric furnace special S.A.E. 4615 seamless tubing, cold drawn or turned finish and is now quoted on sizes of 20 pounds per foot and heavier at 10.75c, Pittsburgh; on 19.99 to 9.50 pounds per foot, inclusive, 10.50c; on 9.49 to 4 pounds per foot, inclusive, 10.75c; and under 4 pounds per foot, 11c. The market for this material is confined to about a half dozen consumers throughout the country, it is said.

Corresponding reductions were effective at Shelby, O., May 18, and will be at Canton, O., May 25.

Pittsburgh—Buying of oil country tubular goods still is a dominant feature in the pipe market. Practically no activity is reported in line pipe although the average of tube mill operations in this district last week was steady at 45 per cent. With National Tube Co. resuming operations in its McKeesport, Pa., works after a shutdown of over a month, this rate is likely to be bettered this week.

Chicago — Both inquiries and awards in the cast pipe market are small. Shipments against old contracts have improved steadily during recent weeks, but are in excess of new business. Newly established prices are well maintained.

Birmingham, Ala.—Pipe shops are maintaining the pace of recent weeks, and brighter prospects are observed as awards for over 7500 tons of various sizes are seen on the open market with possibilities of contracts being let for twice that amount before the end of the month. Alabama Pipe Co. has reopened its Talladega soil pipe plant, after two years' idleness.

San Francisco—Cast pipe awards were the third largest of any week this year and aggregated 1040 tons, bringing the total for the year to 9503 tons as compared with 7679 tons for the corresponding period in 1934. Award on 5150 tons for Los Angeles is expected to be made within a few days. Oakland, Calif., has a new inquiry out for over 1600 tons.

Seattle—United States Pipe & Foundry Co., Burlington, N. J., took 450 tons of 4 to 12-inch cast pipe for Olympia, Wash., the largest tonnage placed in this area in several weeks. Bids were opened this week for 300 tons at Heppner, Oreg., and 145 tons at Bainville, Mont.

Cast Pipe Placed

552 tons, 6 to 12-inch, class 150, Oakland, Calif., to United States Pipe & Foundry Co., Burlington, N. J.

450 tons, 4 to 12-inch, Olympia, Wash., to United States Pipe & Foundry Co., Burlington, N. J.

400 tons, 8-inch, Brownsville, Tex., to Sherman Machine & Foundry Co., Oklahoma City, Okla.

330 tons, Dayton, Oreg., to unnamed interests.

110 tons, sewage disposal plant, Craig colony, Sonyea, N. Y., to R. D. Wood & Co., Florence, N. J.; W. D. McCay Co., Beaver Meadow, Pa., general contractor.

Cast Pipe Pending

1600 tons, 4 to 20-inch, Oakland, Calif.; bids May 22.

300 tons, 8-inch, Heppner, Oreg.; bids in.

145 tons, 4, 6 and 8-inch, Bainville, Mont.; bids in.

143 tons, Emerytown, Utah; bids May 25.

140 tons, Inglewood, Calif.; United States Pipe & Foundry Co., Burlington, N. J., low.

118 tons, culverts for use in relocation of approximately 13 miles of railroad main line and side tracks for construction of Beach City, O., reservoir; bids June 4 to Zanesville, O., engineers.

Unstated tonnage, 6 and 8-inch, Jacksonville, Oreg.; bids May 23.

Unstated tonnage, improvements and extensions, Spokane; funds appropriated.

Strip Steel

Strip Prices, Page 67

Pittsburgh—According to indications among strip producers last week decision was inferred to extend the 1.85c, Pittsburgh base on hot-rolled strip and the 2.60c, base on cold-rolled strip, for third quarter. Likewise stainless strip steel prices are to be extended unchanged for all grades and analyses.

Cleveland — Notwithstanding releases from Chevrolet and Fisher Body plants, strip specifications from the automobile industry are in lighter volume than before labor dif-

ficulties caused suspension of some shipments. Sellers expect prices to be reaffirmed for third quarter when filed this week.

Chicago—While strip demand is less active than during most of first quarter, orders and shipments lately have been fairly steady. The outlook for moderately heavy requirements of the automotive industry during the next 30 days is favorable, settlement of labor disturbances in East being beneficial to sentiment. Demand for both hot and cold-rolled strip from miscellaneous users is steady.

Boston—Cold-rolled strip buying has declined. Incoming volume is more spotty and backlogs are light, rerollers in most instances operating on erratic schedules. Slit sheets continue to cut into narrow strip volume. Prices are firm and unchanged.

New York—Demand for steel strip is spotty at about the same level as for several weeks.

Philadelphia—Strip tonnage remains fairly steady, with general volume restricted. Prices are unchanged, with hot-rolled at 2.16c, Philadelphia, and cold cold-rolled at 2.91c.

Wire

Wire Prices, Page 67

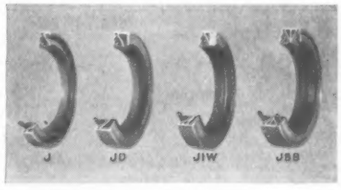
Pittsburgh—All indications late last week pointed to extension of wire prices for third quarter. Thus, carload quantity prices on plain manufacturing wire probably will be 2.30c, base Pittsburgh; spring wire, 3.20c, and nails, $2.60c per keg. Formal price declarations to this effect are likely to be made this week.

Cleveland—Demand for wire and wire products is holding up much better than expected. Some makers report their tonnages booked here each week for more than a month have varied less than 100 tons. A strong agricultural market has taken up some of the temporary slackening in specifications from nut and bolt manufacturers.

Chicago—Activity in wire and wire products is fairly steady at a rate moderately below that of the past two months. The outlook for fair demand from the automotive industry during the next 30 days is favorable, while operations of miscellaneous consumers of manufacturers' wire are holding fairly well. Little change is noted in the movement of wire products, though demand is brisk in some farm areas.

Boston—Wire mill finishing operations are barely maintained with some decline in several departments.

All oil seals look a good deal alike, and perform a good deal alike at the start. But under the searching analysis of the chemist, and the minute physical tests of the engineer, it is quickly discovered that all seals are not alike, and why Milpaco Oil Seals are not only exceptionally effective in sealing but maintain their effectiveness for a longer period of time—even under severe operating conditions.



Types and designs for every application

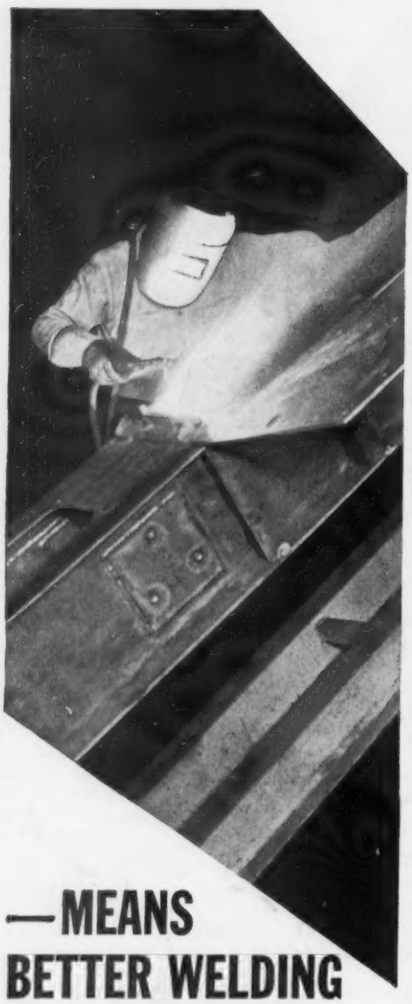
It will be our privilege to give you further information on Milpaco Oil Seals, and to furnish you with engineering advice on any oil seal problem or application you may have.

S101

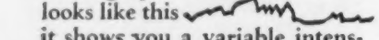
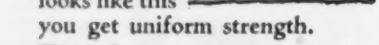
Write for Oil Seal Bulletin Number 302

MICHIGAN LEATHER PACKING CO.
720 Fourteenth Avenue
DETROIT
Represented in Principal Cities

WHY THE SELF-STABILIZED ARC



—MEANS BETTER WELDING AT LOWER COST

You get the facts about welder efficiency when you look at the oscillograph record. When it looks like this  it shows you a variable intensity of heat. And that shows up in the etched or X-rayed weld with variations in penetration . . . in fusion . . . in density. When the current recording looks like this  you get uniform strength.

Write for your copy of the 24-page Bulletin, "Weld It Well".

HARNISCHFEGER CORPORATION
4411 W. National Ave., Milwaukee, Wis.

P&H HANSEN ARC WELDERS

—The Market Week—

Spring wire, specialties and manufacturers' wire are the most active.

New York—Prices on certain descriptions of book binder wire become effective at Chicago, May 23. High carbon, flat tinned book binder wire will be 18.75c, Chicago, and high carbon, round tinned, 13.75c. These are initial prices on these descriptions at Chicago.

Bolts, Nuts, Rivets

Bolt, Nut, Rivet Prices, Page 67

Bolt and nut producers are preparing to announce third-quarter prices with likelihood the present 70-10-5 discount will be extended nominally. Some bolt and nut producers are reported favoring an advance, but before such could be undertaken certain irregularities from the 70-10-5 discount would have to be eliminated. Large rivets are also likely to be extended at 2.90c, Pittsburgh or Cleveland, 3.00c Chicago, base; no change from 70-5 discount on rivets, 7/16-inch and smaller seems likely.

At Cleveland an adjustment in the discount on milled hexagon cap screws is announced, in line with increased discounts recently on upset cap and set screws. Milled hexagon cap screws now are 85 and 10 off, instead of 85.

Cold Finished

Cold Finished Prices, Page 67

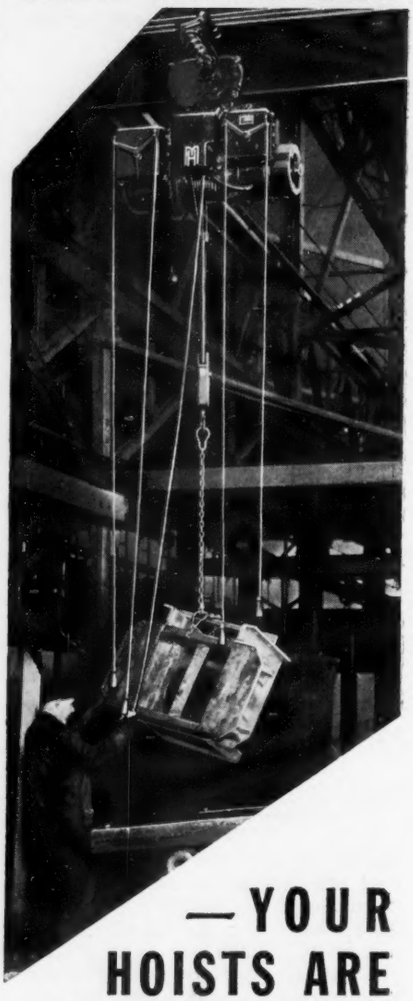
Pittsburgh—It appeared likely late last week that 1.95c, Pittsburgh base, would be extended unchanged for third quarter. There have been several proponents for restitution, in all or in part, of the $3 a ton cut which dates from early April. Reaffirmation, however, is to be expected with formal filing this week on the following other base prices: Gary, Ind., and Cleveland, 2.00c; Buffalo, 2.05c; Detroit, 2.15c, and Eastern Michigan, 2.20c.

Philadelphia—Cold-finished steel bars may be advanced when producers file prices this week for third quarter. The increase, it is believed, would be sufficient to offset the $3 reduction made a few weeks ago. What prices eventually will prevail in the third quarter, will depend, of course, upon what action is finally taken with regard to the steel code.

Quicksilver

New York—Quicksilver prices are unchanged in a quiet market. Lots of 100 virgin flasks of 76 pounds each may be had at $72 a flask, while lots of 15 to 24 flasks, inclusive, are $73.50.

WHEREVER HEAVY PIECES ARE HANDLED



—YOUR HOISTS ARE MONEY SAVERS

In addition to offering helpful suggestions on all types of arc welding, P&H Engineers are in position to assist you in selecting the right kind of material handling apparatus to complete your weldery set-up. P&H Hoists and Position Finders are invariably found in service where over-all welding costs are the lowest. Ask for catalogs RH-2 and M-1.

HARNISCHFEGER CORPORATION
4411 W. National Ave., Milwaukee, Wis.

P&H MILWAUKEE ELECTRIC HOISTS

Shapes

Structural Shape Prices, Page 66

New York — Taylor-Fichter Steel Construction Co. Inc., New York is low on the Harlem river crossing, Triboro bridge, requiring 7500 tons. Included in this are 1760 tons of silicon steel, the material being bid direct. New inquiry is light and bids on the Westchester county home, Eastview, N. Y., 3000 tons, were postponed to May 21 from May 16.

While not immediately active, substantial structural projects being planned for bids include 5000 tons for the Hendrik Hudson bridge, Spuyten Duyvil, N. Y.; 12,000 tons, west side elevated highway, Forty-ninth to Fifty-ninth streets, Manhattan (New York); 5000 tons, bridge, Seventy-seventh-Eighty-first streets, New York; and 10,000 tons additional for the New York Triboro bridge structure.

A further decline in the bookings and also a reduction in shipments of fabricated structural steel was noted during April, according to the American Institute of Steel Construction.

Pittsburgh — Structural steel requirements for the Library of Congress addition, amounting to about 9000 tons, are reported to be competitive, with the low bidder for the general contract, Consolidated Engineering Co., Washington, not having become obligated for the steel. Structural inquiry includes more private jobs of 200 to 300 tons. Plain structural shapes probably will be extended for the third quarter at 1.80c, base, Pittsburgh.

Cleveland—Award of 650 tons of structural shapes for the National Superior Mfg. Co., Toledo, O., has been held up by unsettled labor conditions in that city. Several substantial tonnages recently figured in this district still are pending. Fabricators here submitted bids last week on 1000 tons for a high school in Olean, N. Y.

Chicago — Awards have been increased by the placing of about 5000 tons of piling for the Alton, Ill., dam and 2300 tons for the Ashland avenue bridge here. Other orders usually are for small lots with bridge work predominating and a scarcity of private projects prevailing. The largest of new inquiries is 9000 tons of piling for the Fort Peck, Mont., dam, on which bids close May 31.

Boston — Pending structural requirements are small. Three state bridges, New Hampshire, taking about 200 tons, have been placed.

Philadelphia — Structural buying remains light, with new inquiries coming out slowly. The Reading railroad will open bids this week on 100 tons for a bridge in Columbia county, Pennsylvania, and plans are now being brought out for a county bridge at Plymouth, Luzerne county, Pa. At least another month is expected to elapse before much new PWA work comes up for bids.

San Francisco—Structural awards aggregated close to 2000 tons during the week, bringing the total for the year to 32,260 tons, compared with 44,497 tons for the same period last year. Important lettings included 850 tons for the California Walnut

Shape Awards Compared

	Tons
Week ended May 18	12,907
Week ended May 11	7,625
Week ended May 4	15,296
This week in 1934	17,178
Weekly average, 1934	16,284
Weekly average, 1935	14,979
Weekly average, April	15,412
Total to date, 1934	367,838
Total to date, 1935	299,576

"A.W."
SUPER-
DIAMOND
for Permanence and Economy
"Battle decks" for Bridges—the daily grind and pound of traffic can proceed promptly, safely and "permanently" over "AW" Super-Diamond Floor Plates.
More and more engineers are realizing the value of this floor plate on new construction (and the replacement of old decks) because it saves wear and tear—and taxes.
Also made in the reliable Standard Diamond and Diamondette patterns in ferrous or non-ferrous metals.
SLIP-PROOF • OIL-PROOF
HEAT-PROOF • CRACK-PROOF • SAFE • SIGHTLY
SELF-DRAINING
SPLINTERLESS
ALAN WOOD STEEL CO.
ESTABLISHED
TRADE A.W. MARK
1826
CONSHOHOCKEN, PA.
109 Years' Iron and Steel Making Experience
ALAN WOOD
STEEL COMPANY
CONSHOHOCKEN, PA.
Branch Offices: Philadelphia • New York • Seattle
Los Angeles • San Francisco • Memphis • Boston

Growers' association building in Los Angeles, and 600 tons for tunnel ribs for the metropolitan water district, Los Angeles.

Seattle—The market assumed increased activity this week, considerable tonnage pending. Unstated interests have taken 100 tons for the Kooskia, Idaho, bridge, through S. G. Morin, general contractor, Spokane. Moore Dry Dock & Shipbuilding Co., San Francisco, was awarded a 138-foot steel diesel powered passenger and freight steamer for Mexican interests on a bid of $144,346, requiring 160 tons of shapes and plates.

Shape Contracts Placed

5000 tons, piling, Alton, Ill., dam, to Illinois Steel Co., Chicago; Spencer, White & Prentis, New York, general contractor.

2300 tons, Ashland avenue bridge, Chicago, to American Bridge Co., Pittsburgh; Ketler-Elliott Co., Chicago, general contractor.

850 tons, California Walnut Growers' association building, Los Angeles, to Pacific Coast Steel Corp., San Francisco.

600 tons, tunnel ribs, metropolitan water district, Los Angeles, to Youngstown Steel Car Corp., Youngstown, O.

530 tons, state highway bridge, route 44, Paulsboro, N. J., to American Bridge Co., Pittsburgh; Gray Construction Co., Morristown, N. J., general contractor.

400 tons, bridge, Sag, Ill., to Duffin Iron Co., Chicago.

398 tons, highway bridge, Alfalfa county, Oklahoma, to Patterson Steel Co., Tulsa, Okla.

300 tons, mixing plant, Odair, Wash., to Joseph T. Ryerson & Son Inc., Chicago.

260 tons, state highway bridge, Brownson, Tex., to Virginia Bridge & Iron Co., Roanoke, Va.

255 tons, service plant, Chevrolet Motor Co., Atlanta, Ga., to Ingalls Iron Works, Birmingham, Ala.

250 tons, administration building, polytechnic high school, Los Angeles, to Consolidated Steel Corp., Los Angeles.

210 tons, factory addition, Campbell Soup Co., Camden, N. J., to Morris Wheeler & Co. Inc., Philadelphia; this was noted last week as going to an unnamed fabricator.

200 tons, bridge, Big Springs, Tex., to Pittsburgh-Des Moines Steel Co., Pittsburgh.

200 tons, bridge, Nampa, Idaho, to American Bridge Co., Pittsburgh.

195 tons, state highway bridge, NRH 498-13-Gainesville, Ga., to American Bridge Co., Pittsburgh.

184 tons, revolving crane, specification 617, Boulder dam, Boulder City, Nev., to Judson-Pacific Co., San Francisco.

160 tons, including plates, for 138-foot diesel ship for Mexican interests, to Moore Dry Dock & Shipbuilding Co., San Francisco.

150 tons, tower house, North Platte, Nebr., to Omaha Steel Works, Omaha.

145 tons, state highway bridge, PWA 76, 79TR-1B, Pike county, Missouri, to Illinois Steel Bridge Co., Jacksonville, Ill.

120 tons, bridge, Beach Lane, West Hampton, N. Y., to Fort Pitt Bridge Works, Pittsburgh; E. L. North, Merrick, N. Y., general contractor. National Bridge Co., Long Island City, N. Y., awarded 40 tons reinforcing bars.

110 tons, grain elevator for Kansas City Southern railroad, to Joseph T. Ryerson & Son Inc., Chicago.

100 tons, state bridge, at Kooskia, Idaho, to unnamed interests; S. G. Morin, Spokane, Wash., general contractor.

100 tons, shapes and bars, church, Cranston, R. I., to J. H. Tower Iron Works and G. Fred Swanson Inc., both Providence, R. I.

100 tons, building addition, Pratt institute, Brooklyn, N. Y., to Bethlehem Fabricators Inc., Bethlehem, Pa.; through Tidewater Building Co.

Shape Contracts Pending

9000 tons, piling, Ft. Peck dam, Wiota, Mont.; bids May 31.

9000 tons, Library of Congress addition, Washington; Consolidated Engineering Co., Washington, low.

8000 tons, superstructure, Wabash railroad bridge over Missouri river near St. Charles, Mo.; bids June 12.

7500 tons, Harlem river span, Triboro bridge, New York; Taylor-Fichter Steel Construction Co. Inc., New York, low.

1700 tons, piling, Monroe, La.; S. & W. Construction Co., Memphis, Tenn., low for general contract.

1200 tons, high school, Dorp, Staten Island, N. Y.; Federal Construction Co., New York, low.

500 tons, press shop, Pontiac, Mich., for Fisher Body Corp., Detroit; bids in.

SPECIALIZED PRODUCTION

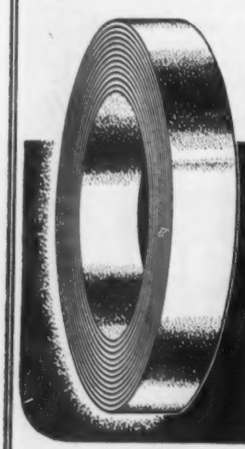
means

PROPER SPECIFICATION

EXACTING MANUFACTURE

DEPENDABLE DELIVERY

Test Thomastrip for your product. Send for test samples. Specify gauge, width, temper and coat desired.



THE THOMAS STEEL CO. WARREN, O.

SPECIALIZED PRODUCERS OF COLD ROLLED STRIP STEEL

THOMASTRIP

STRIP COLD ROLLED STEEL

BRIGHT FINISH • ZINC COATED

COPPER COATED • CADMIUM COATED

425 tons, power plants, Columbus and Monroe, Nebr.
400 tons, postoffice, Charlotte, N. C.; bids May 21.
350 tons, bridge, Columbus Fall, Mont.
275 tons, bridge, Yazoo, Miss.
275 tons, warehouse, Charlotte, N. C., for General Motors Corp., Detroit.
250 tons, postoffice, Detroit; Joseph A. Holpuch Co., Chicago, general contractor.
200 tons, state bridge, Ft. Wayne, Ind.
200 tons, building, American Radiator Corp., Buffalo.
200 tons, building, Metal Package Corp., Maspeth, Long Island, N. Y.
193 tons, bridge, Intracoastal canal, Houma, La.; bids June 10 to Louisiana highway commission, Baton Rouge.
190 tons, livestock building, for state of New York, Syracuse, N. Y.
187 tons, relocation of approximately 13 miles of main line and side tracks, Pennsylvania railroad, near Brinkhaven, O.; bids June 4 to Zanesville, O., army engineers. Sixty tons of reinforcing steel and 118 tons of cast iron pipe also required.
180 tons, state undercrossing, Pierce county, Washington; Joseph Warter, Tacoma, general contractor.
175 tons, warehouse, Reading Co., Twentieth and Hamilton, Philadelphia, reported last week as placed, still pending.
172 tons, state bridge, Tumwater Canyon, Chelan county, Washington; bids May 21.
130 tons, school, Lynn, Mass.; E. C. Blanchard Co. Inc., Lynn, low.
100 tons, 15-ton gantry crane, specification 686-D, Boulder dam, Boulder City, Nev.; bids May 31.
100 tons, bridge, Reading railroad, Columbia county, Pennsylcania; bids May 21.

Reinforcing

Reinforcing Bar Prices, Page 67

New York—Pending volume of reinforcing bars is heavier. Improvement in small-lot orders continues. Additional requirements for state highways and bridges in New York and New Jersey are expected out shortly.

Cleveland—Some progress is being made by the city council here with the proposed downtown subway system, which as planned now will require several thousand tons of reinforcing bars. This depends on financial aid from the government. Small projects are fairly numerous, and include a bridge in the Chagrin reservation of the metropolitan park district, near Cleveland.

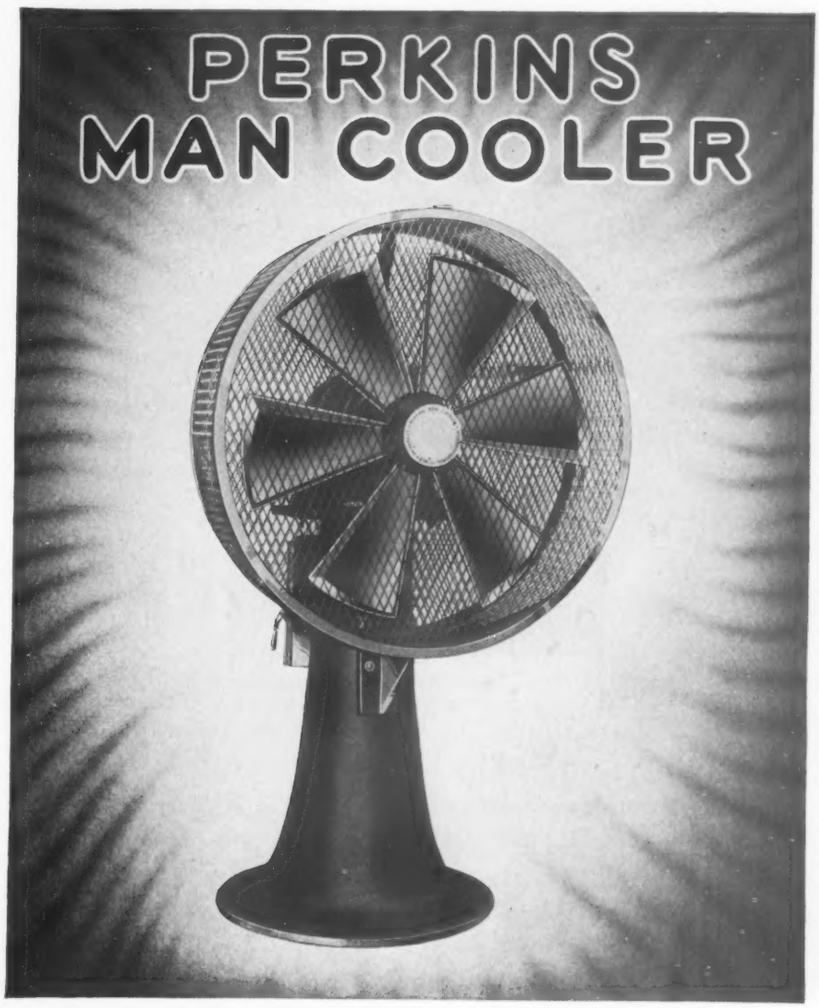
Chicago—Large awards are few, but total business has been increased by the placing of 1400 tons for the Alton, Ill., dam. Distributors note an increasing number of purchases of small lots as miscellaneous construction work is expanding. A dearth of large private projects exists, with most prospective orders appearing for bridge and other public work.

Pittsburgh — Owing to the fact that producers of reinforcing steel bars have protected contracts covering specific building jobs against increases in prices, they will have to absorb the recent freight rate surcharge. Consolidated Engineering Co., Washington, low on the Library of Congress addition, Washington, may require 1500 tons of new billet bars. Bids on 600 tons for the Pleasant Hill dam, Ashland county, Ohio, will be opened shortly by the Zanesville, O., army engineers.

Philadelphia — The Turner Construction Co. has been awarded the general contract for the textile factory building to be erected in Allen-

Concrete Awards Compared

	Tons
Week ended May 18	2,257
Week ended May 11	3,907
Week ended May 4	1,017
This week in 1934	7,291
Weekly average, 1934	4,084
Weekly average, 1935	4,963
Weekly average, April	6,903
Total to date, 1934	104,359
Total to date, 1935	99,255



Oscillating and Stationary Types—Hundreds of users of Perkins Man Coolers have proven for themselves the wisdom of investment in Perkins Man Coolers.

Readily moved from place to place, they bring comfort to men working in hot places, resulting in decreased labor turnover, increased production and fewer accidents.

B. F. PERKINS & SON, INC., Holyoke, Mass.
ENGINEERS AND MANUFACTURERS

town, Pa., by Ludlow Mfg. Associates, Boston, and 200 tons of reinforcing bars are to be placed. Billet steel bars, cut lengths, are 2.36c, Philadelphia.

San Francisco—A fair volume, aggregating 1400 tons, was placed during the week. Soule Steel Co. booked 207 tons for the Key school in San Francisco.

Seattle—Demand is inactive, pending business being of small proportions. Many projects are listed as in expectation of federal aid. The state of Washington will open bids May 28 for five highway projects including a 373-foot concrete span near Leavenworth.

Reinforcing Steel Awards

1400 tons, Alton, Ill., dam, to Illinois Steel Co., Chicago; Spencer, White & Prentis, New York, general contractor.

207 tons, Francis Scott Key school, San Francisco, to Soule Steel Co., San Francisco.

200 tons, administration building, polytechnic high school, Los Angeles, to unnamed interest.

150 tons, hospital, New Brunswick, N. J., to Igoe Bros., Newark, N. J.; through Frank Briscoe Co.

150 tons, California Walnut Growers' association building, Los Angeles, to unnamed interest.

150 tons, reinforcing wire fabric, department of public works, New York, to American Steel & Wire Co., New York

Reinforcing Steel Pending

1000 to 1500 tons, estimated, Library of Congress addition, Washington; Consolidated Engineering Co., Washington, low on general contract.

1000 tons, caisson core wall, Quabbin reservoir dam, Enfield, Mass.; C. J. Maney Co. Inc., Boston, and B. Perini & Sons Inc., Framingham, Mass., joint general contractors.

1000 tons, postoffice, Detroit; Joseph A. Holpuch Co., Chicago, general contractor.

600 tons, Pleasant Hill dam, Ashland county, Ohio; bids soon to Zanesville, O., army engineers.

200 tons, textile factory, Allentown, Pa., for Ludlow Mfg. Associates, Boston; Turner Construction Co., Philadelphia, awarded general contract.

130 tons, section No. 2, Bills Brook dam, Barkhamsted, Conn.; bids June 5.

Tin Plate

Tin Plate Prices, Page 66

Pittsburgh—For the second consecutive week, the average of tin plate mill operations has advanced 5 points, to 85 per cent. This rate, however, is in excess of incoming specifications, which reflects ample stocks among canmakers. Most material now being specified by canmakers is for late June shipment. Increasing amounts of tin plate are being used for beer containers. The tin plate market remains $5.25 per base box, Pittsburgh.

Semifinished

Semifinished Prices, Page 67

According to well-informed sources, the following prices at Pittsburgh on semifinished steel will be unchanged for the third quarter: Billets, blooms and slabs, $27; sheet bars, $28; common wire rods, $38, and combination wire rods, $40. These prices will be filed this week.

Demand from tin plate and sheet mills has increased. Skelp, tube rounds and wire rods are moving in fair volume.

Metallurgical Coke

Coke Prices, Page 67

Irregularity in prices of standard furnace coke, beehive grade, continues. The code price is $3.60 per ton, Connellsville, Pa., oven basis, as minimum, but sales have been irregular from this figure and in many cases, standard furnace coke has been sold at less under the name of heat-

☆

Life

IS LIKE THAT AT HOTEL CLEVELAND

EVERYONE remembers you . . . gives you that pleasant little glow of realizing we're glad to have you here, and want you to be comfortable.

Beds are deep and very soft, rooms are bright and pleasantly furnished.

The food at Hotel Cleveland is famous. Rare delicacies that remind you of France, or simple dishes prepared in the home-like way you enjoy them.

In addition to being Cleveland's most modern and comfortable hotel, this is also the most centrally located in the city. Hotel Cleveland is only one step, via covered passage, from your train, and two steps from anywhere you'll want to go in the city.

HOTEL CLEVELAND *Cleveland*

Rooms from $2.50 for one, $4 for two.

ing coke. Practically no deviation is noted in the $4.60, Connellsville, Pa., oven basis on foundry coke, or in premium foundry coke at $5.35, and in some cases, $5.10.

Deliveries of by-product coke at Chicago are holding steady and prices are unchanged. At Cincinnati demand is lessening, with the price firm. St. Louis consumers are specifying somewhat less freely and Birmingham, Ala., producers are reducing production slightly.

Pig Iron

Pig Iron Prices, Page 68

Pittsburgh — Prices of foundry, basic and bessemer iron are expected to be extended for third quarter with formal declarations to this effect to be announced by producers this week. Buyers, expecting such a price declaration, obviously have not been stocking requirements and current specifications reflect this situation. Following a pronounced buying movement in charcoal iron among roll makers in this district a few weeks ago, this activity has fallen off.

Cleveland—Intrastate freight rate surcharges have been ordered in effect in Ohio June 1 following the meeting of the interstate commerce commission with the state public utilities commission and railroads. The surcharges conform with the interstate rates, 7 per cent of the existing rates, up to a maximum of 45 cents per ton. In the local switching areas, of course, there will be no increase. Consumers as an average in the northern Ohio territory outside of basing point cities, it is estimated, will have to pay 7 to 10 cents more per ton for freight.

The market is quiet, sales limited to spot requirements, bookings here for the week amounting to about 2000 tons. Shipments so far this month are slightly ahead of those in the comparable period in April.

Chicago—Pig iron shipments so far this month show little change from the corresponding April rate, while new business compares favorably with that of the second month of the first quarter. Present prices are expected to be continued on the filing of new schedules this week and consumers are ordering largely for definite requirements.

Boston—Pig iron demand is sluggish with buying generally in less than car lots. Truck deliveries are frequently made. Larger consumers generally are covered for the remainder of the quarter.

New York—Pig iron specifications are light. Some sellers look for shipments this month to be lighter than for April, in view of the anticipatory buying during the first half of the latter month, prior to the freight rate advance. Pig iron sellers are expected to make no change when they begin filing quotations for third quarter. A leading inquiry calls for 400 tons of foundry iron for the A. P. Smith Mfg. Co., Orange, N. J.

Philadelphia—Leading producers believe shipments this month will show a moderate gain over April. Tonnage still is being bought on a hand-to-mouth basis. Leading cast pipe maker appear to have heavy stocks on hand. Producers are expected to make no change in their prices for third quarter, when they begin filing this week.

Buffalo — Announcement that American Radiator Co.'s largest plant here will reopen later this year has brought considerable speculation as to whether this may result in the relighting of the now idle furnace of the Tonawanda Iron Works, American Radiator subsidiary. A large stock of iron is piled at the blast furnace, but the company's consumption is heavy when its local plants are on full production.

Cincinnati—Pig iron shipments during the past week were at recent

CRANES . . to suit your work

LOCOMOTIVE CRANES
•
CRAWLER CRANES
•
SHOVELS
•
BUCKETS
•
PILE DRIVERS

When you see an Industrial Brownhoist on a job the work invariably is going ahead smoothly and without interruption. The reason is that the owner has bought a crane to suit his work, rather than making the work suit the crane.

Industrial Brownhoist builds cranes in capacities of 6 to 200 tons—with steam, gas, Diesel or electric power—on railroad or crawler mountings. There is no need to compromise when you buy an Industrial Brownhoist—you know that the crane is right.

INDUSTRIAL BROWNHOIST CORPORATION
General Offices: Bay City, Michigan
District Offices: New York, Philadelphia, Chicago, Cleveland

INDUSTRIAL BROWNHOIST

levels, considerably below the peak of the year. Some recession is noted in the agricultural implement field, the seasonal peak having been passed. Stove foundries' output is high.

Birmingham, Ala. — Two pipe foundries have been started in this district recently. Nine blast furnaces are making iron, the large Fairfield furnace of Tennessee Coal, Iron & Railroad Co. going out recently and the No. 3 furnace of the Woodward Iron Co. being brought back into commission after being banked for 19 months.

St. Louis—Shipments and new buying of pig iron are in smaller volume, but the situation is by no means discouraging. Purchasing is well diversified, and comes mainly from the smaller melters, many of whom failed to participate in the buying movement prior to the freight advance, and whose inventories are light. Jobbing foundries report the placement of a considerable volume of orders for miscellaneous castings.

Toronto, Ont.—Merchant pig iron sales for the past week held around the same level as the preceding two or three weeks, totaling approximately 650 tons. The daily melt is increasing, with further improvement expected. Pig iron production is sustained around 1200 tons per day.

Detroit's Newest Downtown Hotel

DETROIT LELAND

800 OUTSIDE ROOMS with BATH
$2.50 single $3.50 double

Famous for Fine Foods
Club Breakfasts—
30c . . . 50c . . . 75c
Lunches—
40c . . . 50c . . . 75c
Dinners—
75c . . . $1 . . . $1.25

From the moment you enter our doors you will know that here you are indeed a *guest*. You will appreciate the courteous, cheerful, but *unobtrusive* service for which the Leland is noted. You will revel in the luxury you have a right to expect in a hotel that's as modern as tomorrow's motor car. You will like the superbly convenient downtown location. We hope you will accept our invitation to make the Leland your home in Detroit.

GARAGE IN CONNECTION

(AT CASS AND BAGLEY AVENUES)
DETROIT

Scrap

Scrap Prices, Page 69

Pittsburgh—Brokers' buying prices through last week extended the firmness first recorded two weeks ago and in some cases, owing to tightening mill specifications on heavy melting steel scrap, brokers have been obliged to pay as high as $12.25 for coverage. Railroad steel scrap, owing to quality, appears to be at a current premium, and the Baltimore & Ohio sold its No. 1 steel for around $12.50, delivered in this district, but scrap rails have brought prices around $12.75 and even $13 for shipment here. A down-river mill is especially active in purchasing hydraulic compressed sheets and brokers are paying $12.25 for that delivery. Railroad steel specialties here are quoted $14.50 to $15 and machine shop turnings, $8 to $8.50. No. 2 heavy melting steel appears to be a drug on the market temporarily and is easy at around $10.50.

Cleveland—Some shipments of miscellaneous scrap are being made but the market is dull though prices are fairly held. Stocks are light and holders are unwilling to sell at present levels. Mill reserves are being reduced and further buying is expected soon.

Chicago—An impasse has been reached in the scrap market, with mills induced by declining operations to postpone buying and sellers unwilling to accept substantially lower prices in view of inability to buy material at such figures. Heavy melting steel continues to bring better than $10.50 in the dealers' market, but some consumers are offering no more than $10. Malleable scrap remains the outstanding strong grade, with supplies scarce and consumption active. A boat load of 3000 tons of a special grade of scrap has arrived here from the Lake Superior district.

Boston—Scrap prices are steadier, due largely to brisk buying for export. Shippers are paying $8.50 and $7.50, dock, for heavy melting grades. Domestic demand is light, although New England consumers are paying slightly better prices on most grades. Forge flashings and machine shop turnings are stronger.

New York — Scrap prices are steadier. Buying for export is brisk, with shippers paying $8.50 and $7, barge, for heavy melting steel scrap grades, and, in a few instances, slightly higher. Movement of other grades for export is also heavier, although domestic activity is dull.

Heavy breakable cast is stronger, dealers paying $5.75 to $6.00 shipping point.

Philadelphia — Notwithstanding light domestic demand, the trend of scrap prices continues upward. No. 2 melting steel is $9 to $9.50, delivered, but the top figure appears the more representative.

Delivered wharf prices on export scrap are unchanged at $9.50 and $8.50, respectively, on No. 1 and No. 2 steel, although bids of foreign consumers recently have been easier. Some sales within the past few days have been reported at concessions of 25 cents, but this has not been reflected in the local dealers' buying prices.

Buffalo — Consumers have increased their bids to a firm offer of $10.50 for No. 1 heavy melting steel but have been unable to make tonnage purchases. Dealers are holding this and other material for substantially higher prices than consumers are willing to pay. Such small lot sales as have been made generally point to a steadily rising market. Dealers who advanced their prices 50 cents to $1 a ton in nominal lists report some transactions are taking place at the higher ranges.

Youngstown, O.—Purchase of a moderate tonnage of heavy melting steel by a valley steelmaker at an advance of 50 cents over the preceding sale has lifted iron and steel scrap prices here.

Detroit—An appreciable strengthening of sentiment, reflected partially already in prices, is manifest in iron and steel scrap. Dealers are bidding more for automobile offerings. Consumers are closely watching the market. Production of scrap has been slightly lower the past three weeks due to the cessation at Chevrolet, but is snapping back this week. Twenty-five to 50-cent increases have been recorded in turnings, forge flashings and No. 1 cast.

Cincinnati — Quotations on iron and steel scrap are unchanged. Brokers are active and mills continue to resist buying at current prices.

St. Louis—Iron and steel scrap is inactive, purchasing by melters and dealers being negligible. Dealer contracts have been sharply reduced and prospects for new business are not promising. Offerings are light, giving a stronger general tone.

Birmingham, Ala.—No change is noted in the scrap market and prices hold the level of the past month. Dealers are buying for stock.

Seattle—The export situation continues weak. Japanese buyers are still holding off but exporters believe activity will resume shortly and are replenishing stocks. Local mill and foundry consumption is small. Seattle is calling bids for the sale of 314 tons of miscellaneous scrap steel. Dulien Steel Products Inc., Seattle, has purchased 3000 tons of 60-pound logging railroad rails and is liquidating the steel and equipment stocks of Hofius Steel & Equipment Co. and Union Machinery & Supply Co., Seattle.

Toronto, Ont.—Trading in iron and steel scrap continues to expand with mills in the Hamilton district taking better tonnage of heavy melting steel and other grades. Local dealers state that demand is at the highest level in more than two years, with most transactions now in steel scrap. Montreal dealers also report larger demand for heavy melting steel, wrought iron and steel axles, while turnings are moving slowly.

Ferroalloys

Ferroalloy Prices, Page 68

New York—Ferromanganese sellers are expected to file third quarter prices this week. No change is anticipated, although no official intimations have been given out by any of

IRON ORE

All Lake Superior grades of iron ore

Five established brands of

PIG IRON

Federal Perry Iroquois
Toledo Zenith

COKE

For foundry, industrial and domestic uses

Chicago Solvay
Milwaukee Solvay
Perry Toledo
Waukegan
Zenith

By-product and Steam

COAL

Pickands, Mather & Co.

Cleveland - Chicago - Detroit - Erie - Toledo
Minneapolis - Duluth

the producers. The current price is $85, duty paid, Atlantic and gulf ports. Specifications are comparable with those of a week ago. Domestic spiegeleisen, 19 to 21 per cent is $26, Palmerton, Pa., on quantities up to 50 tons, and $24 on 50 tons and over. Shipments are steady. Third quarter prices also will probably be announced this week on spiegeleisen.

Warehouse

Warehouse Prices, Page 70

New York—Cold-finished sheets have been advanced 10 cents per 100 pounds by several leading warehouse interests, with others expected to follow. Volume with most jobbers holds to the current rate and in some instances sales are ahead of last month. Demand is well distributed.

Cleveland—A slight improvement in warehouse business was noted last week as several strikes in metalworking plants were settled. Volume, however, remains substantially below the comparable period last month.

Boston—Price adjustments by warehouses follow increased freight rates from several basing points, structurals and plates being advanced three cents per 100 pounds. On commercial steel bars, sheets, all finishes, and cold-finished bars, the advance is 5 cents per 100 pounds.

Pittsburgh—Warehouse steel demand is practically at the April rate. All prices are unchanged.

Chicago—Business is fairly steady though off slightly since a month ago. Nails have been reduced 10 cents a keg to $2.95 for local delivery.

Philadelphia — Jobbing demand continues easier. Except for relatively few descriptions, products out of warehouse here have been recently advanced to compensate for recent increases in freight rates. In most cases, the increase was 3 cents; in two instances, 5 cents.

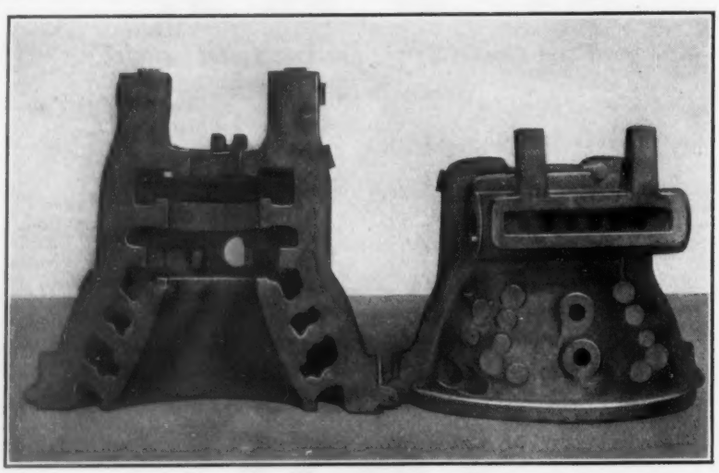
Detroit—Prices of steel from store have been advanced to reflect freight surcharges effective May 13. Sales volume is steady for the season and the general situation in this district is strong.

Cincinnati—Warehouse sales so far this month are close to recent levels. Considerable volume is being attained by building materials in small lots. Prices are unchanged.

St. Louis—Purchasing of finished steel from store is somewhat more active. Expansion in requirements of the general manufacturing trade is in evidence, with certain lines accumulating inventory in anticipation of possible higher third quarter prices.

Seattle—The week's warehouse turnover has been equal to a month ago. Tonnages are small, there being no mill business, but the totals are fair. Prices are unchanged and firm.

QUALITY CASTINGS



Cylinder Base and Cover for Steam Turbine

Rolled Steel Wheels — Rolled Steel Rings and Flanges
Forgings — Steel Castings — Steel Tires
Springs — Gear Blanks

STANDARD STEEL WORKS COMPANY
BURNHAM, MIFFLIN CO., PENNA.
Branch Offices
New York Philadelphia Chicago San Francisco
Akron Portland, O. St. Louis

Iron Ore

Iron Ore Prices, Page 69

Cleveland — Lake Superior iron ore producers' attention shifted suddenly from the mining regions to Washington late last week, when the mine strike threat collapsed, but the Wagner bill loomed up more threateningly. More uncertainty regarding the labor outlook because of the Wagner bill was apparent.

The strike on the Gogebic range was advertised for May 16, but on that day all miners reported for work as usual. The two leading labor organizers had left for parts unknown, and the third was asking mine superintendents what they thought he should do about it. By nightfall all agitators were off the range. It was in this district that 96 per cent of the employes of the Oliver Iron Mining Co., United States Steel Corp., subsidiary, petitioned the company not to suspend work. As reported in STEEL last week, the men did not want to strike.

A similar attempt to organize the miners was made last year on the Mesabi range, and the movement failed. No trouble has been encountered this year on any of the ranges except the Gogebic.

The Lake Superior Iron Ore association reports the following ore consumption and reserve figures:

	Tons
Consumed in March	2,582,986
Consumed in April	2,356,391
Decrease in April	226,595
Consumed in April 1934	2,470,121
On hand at furnaces May 1, 1935	20,643,579
Ore on Lake Erie docks May 1, 1935	4,173,204
Total at furnaces and Lake Erie docks May 1, 1935	24,816,783
Total May 1, 1934	26,536,856

Steel in Europe

Foreign Steel Prices, Page 70

London—(*By Cable*)—Imports of iron and steel into Great Britain in April were less than half those of the preceding month, due to the new import duties. Steel and iron imports in April were 62,739 gross tons, compared with 126,000 tons in March, a

loss of 63,261 tons. Exports, on the other hand, increased from 175,800 tons in March to 210,880 tons in April, a gain of 35,080 tons.

Production of pig iron and of steel ingots and castings was lower than in March. Pig iron output in April was 526,300 gross tons, compared with 554,200 tons in March; the daily rate was 17,543 tons in April, 17,845 tons in March. Active furnaces at the end of April numbered 96, one less than at the close of March. Steel production in April was 808,700 tons, compared with 841,900 tons in March; the daily rate in April, 31,104 tons; in March 32,380 tons.

Inquiries for pig iron for third quarter delivery are coming to Middlesbrough furnaces and two hematite furnaces are expected to restart soon. The steel industry is busy, especially as Continental imports of semifinished steel are severely contracted. The Midland market is improving, especially in structurals. The Scottish export trade is better, and an order for steel sleepers for South Africa has been booked.

The Continent reports export business fairly active, especially to China, and Germany is obtaining orders for South America and the Far East.

Nonferrous Metals

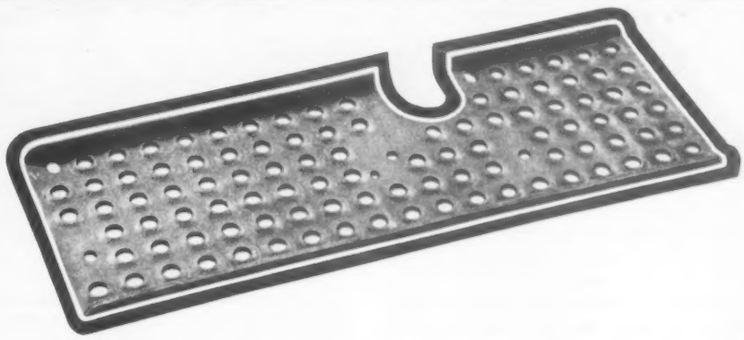
Nonferrous Metal Prices, Page 68

New York—Advances of $3 a ton in lead and $1 a ton in zinc featured a generally strong nonferrous metal market last week. Export and casting copper and tin were firmly established at levels above the previous week's close.

Copper—Casting copper was firm at 8.00c to 8.12½c, f.o.b. refinery, while moderate demand for copper abroad sent the export price as high as 8.27½c, c.i.f. Sales in the domestic market held at a moderate pace with the total allocated for the month through Thursday amounting to 15,276 tons. Interest in the trade was centered in Washington on NRA extension developments.

Lead—Heavy consumer demand and the stronger statistical position of the industry resulted in three rises of $1 a ton each to the final quotation of 3.90c, New York. St. Joseph Lead continued to ask $1 premium in this market. Battery makers, pigment manufacturers and fabricators of lead sheets and pipe were outstanding in the volume of orders booked. Some observers expect a further increase early next week.

Zinc—Moderately increased buying followed the $1 a ton increase Wednesday to the basis of 4.25c, East St. Louis, for prime western



A SKID-PROOF STEP? *sure!*

Railroad freight car steps must safeguard a major hazard. Conditions to be met are extreme: ice, snow, grease, wet shoe soles. Something better than the old-fashioned step has long been needed.

The picture shows the solution offered a great railroad by Parish designing service—and accepted with enthusiasm, being immeasurably safer.

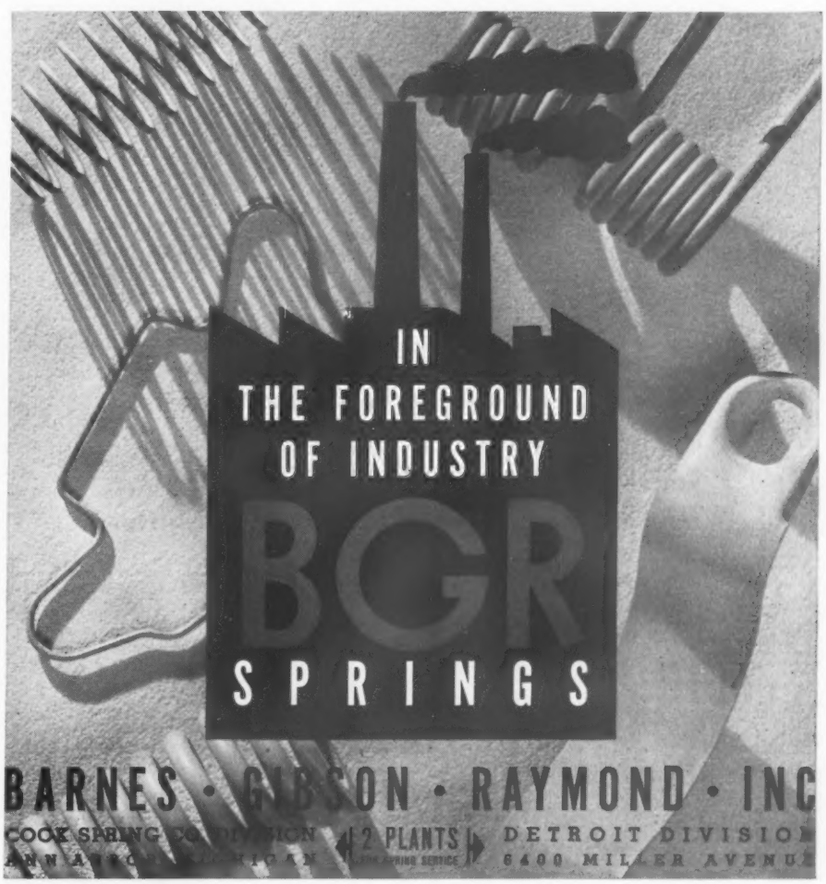
Look at that sharp, self-cleaning tread, and remember that we probably can do something good for you, too.

Why not send us YOUR blue prints AND SPECIFICATIONS?

PARISH PRESSED STEEL Co.

Specialists in difficult stamping design
Robeson & Weiser Sts.,
READING, PENNSYLVANIA

Pacific Coast Rep.: F. Somers Peterson Co., 57 California St., San Francisco, Cal.



spot. Continuation of the labor strike in the Tri-State district gave a boost to sentiment in the trade and if it is prolonged, prices will undoubtedly move higher.

Tin—Straits tin business was light until Thursday with prices practically unchanged. A rapid rise in sterling exchange during the latter part of the week, however, sent spot prices to around 50.50c.

Antimony—American prices advanced ¼-cent Tuesday on slightly firmer prices in China and London. Light buying was reported. Chinese metal prices here were nominal with spot supplies negligible.

Industry Girds For Wagner Bill

(*Concluded from Page* 15)

Permits the board to designate election "units" at its own discretion.

As amended by senate commitee, makes it mandatory upon employers to bargain collectively with the employes (or their representatives) designated by the national labor relations board.

While industry is wrestling with this labor matter, the administration is mobilizing its forces behind a two-year extension of NRA. Despite the acrimonious feeling in the senate against Donald R. Richberg, head of the national industrial recovery board, who incidentally states he will retire June 16 if NRA receives only a short reprieve, the President last week came out in full support of Mr. Richberg and the program approved by the board. This program is as follows:

1—*Two year extension.* This time is necessary to obtain the co-operation of industry in the formulation of codes, with assurances to management and labor of reasonably permanent conditions. It is necessary to maintain an adequate personnel in the NRA; to work out problems of code administration; to strengthen enforcement through judicial approval of methods; and to prevent the entire breakdown of labor and fair trade practice provisions by chiselers who are already at work undermining the standards of fair competition. The extension of NRA for a few months will bring rapid deterioration and disintegration of the whole industrial recovery program.

2—*Adequate period for the revision of codes*—three to six months.

3—*Improved statement of legislative policies and standards* to give additional guidance and authority for administrative action.

4.—*Jurisdiction of NRA limited to industries engaged in, or substantially affecting interstate commerce.* This will prevent the NRA from taking in too much territory and will strengthen its legal authority.

5—*Provision for voluntary codes and adequate authority* for imposition of *limited codes. Both* are necessary. Voluntary codes to encourage improved business practices, including appropriate labor provisions. Limited codes to insure minimum wages, maximum hours, prohibition of child labor, and section 7a.

6—*Definite authority and standards* for the NRA *to prevent unfair competitive practices,* especially those tending to monopoly and destruction of small enterprises.

7—*Methods of code making and enforcement should be further defined;* with enforcement primarily through injunction or cease and desist orders, and with provision for adequate protection of individual rights and small enterprises through opportunity for hearing and judicial review, and public control of all compulsory processes.

CROSBY STAMPINGS

Since 1896 the Crosby plant has been devoted, exclusively, to designing and producing Sheet Metal Stampings. Avail yourself of this experience. Send us your next stamping problem and watch results.

Manufacturers IDEAL TROLLEY WHEELS

THE CROSBY COMPANY

BUFFALO, N. Y.

Branch Offices

New York, Philadelphia, Cleveland, Detroit, Chicago.

Will Discuss Institute Papers

A LIVELY discussion of the technical papers to be presented at the forty-fourth general meeting of the American Iron and Steel institute at the Hotel Commodore, New York, May 23, is indicated.

Discussing the paper to be presented by J. C. Whetzel, assistant to the vice president, American Sheet & Tin Plate Co., Pittsburgh, entitled "Modern Steels and Weight Reduction," will be W. Robert Shimer, Bethlehem Steel Co., Bethlehem, Pa., and Col. E. J. W. Ragsdale, chief engineer, railway division, Edward G. Budd Mfg. Co., Philadelphia.

W. C. Oberg, manager of sales engineering, Carnegie Steel Co., Pittsburgh; Earl C. Smith, chief metallurgist, Republic Steel Corp., Youngstown, O., and J. T. Somers, vice president, Wyckoff Drawn Steel Co., Pittsburgh, will prepare discussions of the paper to be presented by S. W. Weckstein, assistant chief engineer, Timken Roller Bearing Co., Canton, O., entitled "Precision Mills for Rolling Strip, Bars and Rods."

W. B. Gillies, vice president, Youngstown Sheet & Tube Co., Youngstown, O., and G. Cook Kimball, Illinois Steel Co., Chicago, are preparing a written discussion of the paper to be presented by D. M. Petty, superintendent of the service division, Bethlehem Steel Co., Bethlehem, Pa., on "The Economic Importance of the Replacement of Obsolete Equipment in Steel Mills."

Abandons Stack at Sharon

Work of dismantling and salvaging the Stewart stack of the Stewart Furnace Co., Sharon, Pa., was started last week by the Hetz Construction Co., Niles, O. The stack, 75 x 17½ feet and built in 1872, had an annual capacity of 110,000 tons of low phosphorus and bessemer pig iron.

Warehouse Group X-Rays Problems

(*Continued from Page* 17)

made in connection with an address by A. J. Copeland, purchasing agent, Industrial Brownhoist Co., Bay City, Mich. Mr. Copeland is a member of the iron and steel committee of the National Association of Purchasing Agents Inc., which group has prepared such a color code on the recommendation of its members. A warehouse committee is to be appointed to co-operate with the purchasing agents in considering this scheme for distributors.

Foreign steel is becoming an increasing menace to the domestic market, but so far no effective measures for combating it have been devised, it was stated in the report by the foreign steel committee of the association. This report, which was presented by A. C. Allshul, Joseph T. Ryerson & Son Inc., Philadelphia, in the absence of Chairman A. J. Bragg, Egleston Bros. & Co. Inc., Long Island City, N. Y., emphasized that the situation may easily become aggravated so as to affect inland points.

The report, dealing with the commoner carbon steel products and not concerning alloy or special steels, pointed out that the large bulk of imported steel is distributed through warehouses. Imports in 1934 totaled 415,000 tons, representing a loss to domestic steel workers of 14,000,000 hours of labor and $11,000,000 in wages.

Higher Duties Imperative

Present import duties were indicated as being entirely inadequate. Tariff on shapes of $4.48, for instance, compares with a duty in France of $48 and in England of $19. Price shading on foreign steel on the eastern seaboard brings quotations $15 to $25 a ton below the market for domestic bars there.

Alternatives for warehouses in meeting this competition were given as follows: Carry and sell foreign steel—which domestic jobbers are reluctant to do; obtain better prices from domestic mills to meet the foreign competition; receive congressional relief in the form of adequate tariff. A minimum of $20 was suggested as the necessary import duty. Possibilities of obtaining relief through any of these means were admitted to be poor.

Marking of foreign steel was described as being a haphazard procedure. When bars are stamped on the ends, such sections are cut off after the material is unloaded. Some products are shipped in bundles and tagged as foreign steel, but the marking is destroyed when the bundles are opened. One suggestion of a manner to distinguish between foreign and domestic steel was that United States mills place some mark on their product which would identify it as a domestic product. Further study of this subject will be carried out in co-operation with the American Iron and Steel institute.

Practically the only objectionable sales practice cited in the report of the alloy steel committee, presented by A. O. Fulton, Wheelock, Lovejoy & Co. Inc., Cambridge, Mass., was a discrepancy between mill and warehouse prices of cold-finished bars. In lots of less than 1000 pounds similar prices exist on hot-rolled bars, but on cold-rolled material producers not only undersell the distributors but quote less than hot-rolled bars.

For 54 reporting members of the association a profit of 98 cents on each $100 of business was shown for 1934, it was stated by A. L. Philbrick, Congdon & Carpenter Co., Providence, R. I., chairman of the cost-of-doing-business committee. This compares with a loss of 71 cents for 42 members in 1933, a loss of $12.46 for 27 members in 1932, a loss of $7.33 for 23 members in 1931.

ATLAS GAS-ELECTRIC LOCOMOTIVES

45 Ton Locomotive especially suitable for economical interplant switching service.

OTHER ATLAS PRODUCTS

Gas-Electric and Diesel-Electric Locomotives . . . Electric Transfer Cars for Blast Furnaces and Steel Plants . . . Stockhouse Scale Cars for Blast Furnaces . . . Concentrate and Calcine Cars for Copper Refineries . . . Automatic and Remote Controlled Electric Cars . . . Pushers, Levellers and Door Extractors . . . Coal Charging Lorries, Coke Guides and Clay Carriers . . . Atlas Patented Coke Quenching Cars for By-Product Coke Ovens . . . Atlas Patented Indicating and Recording Scales . . . Special Cars and Electrically Operated Cars for every conceivable Purpose.

THE ATLAS CAR & MFG. CO.

Engineers . . . Manufacturers

CLEVELAND, OHIO

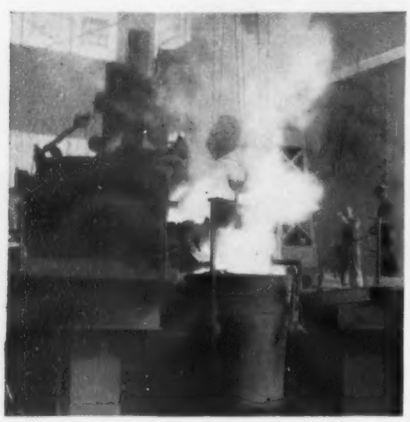
a loss of 74 cents for 28 members in 1930 and a profit of $2.36 for 34 members in 1929. The 1934 profit was due to the increased volume of business, cost of goods sold having increased from $69.76 per $100 of sales to $71.71 last year.

The following directors-at-large were elected by the association to serve terms varying from one to three years:

Three years—Lester Brion, Peter A. Frasse & Co. Inc., New York; Clarence C. Dodge, Geo. F. Blake Inc., Worcester, Mass.; Charles Heggie, Scully Steel Products Co., Chicago. For two years: Walter Kurtz, Peninsular Steel Co., Cleveland; Harold B. Ressler, Joseph T. Ryerson & Son Inc., Jersey City, N. J.; J. Frederick Rogers, Beals, McCarthy & Rogers, Buffalo. For one year: E. C. Graff, Joseph T. Ryerson & Son Inc., Chicago; Jack J. Hill Jr., Chase & Co., Philadelphia; E. L. Parker, Edgar T. Ward's Sons Co., Pittsburgh.

BASIC ELECTRIC STEEL

FORGINGS



N.F.& O. Basic Electric Steel produced under rigid metallurgical control is an important *quality* factor in the ultimate forged product

BASIC ELECTRIC STEEL

Carbon, Alloy, Corrosion Resistant and Special Steels Smooth Forged, Hollow Bored, Rough or Finish Machined, Heat Treated to Specifications ... Forging Quality Ingots, Pressed or Hammered Billets.

NATIONAL FORGE AND ORDNANCE COMPANY

IRVINE, WARREN COUNTY, PENNA.

Equipment

New York—Except for government buying and inquiry, machine tool volume is light with a scattering of orders for one or two tools at a time. Equipment for sheet metal working shops continues to lead. Bids closed last week on a list of 20 tools for Philadelphia navy yard and aircraft factory, including turret lathes, drills, grinders, screw machines, boring mills. A 10-ton electric bridge crane for the Brooklyn navy yard has also been awarded.

Pittsburgh — Several prospective foreign buyers continue to keep options active on possible purchase of idle blast furnaces in the western Pennsylvania district. It is known certain Japanese buyers have obtained options to purchase the Claire furnace at Sharpsville, Pa., which formerly belonged to the Davison Coke & Iron Co., but which is now owned by the Borough of Sharpsville, Pa.; Mexican interests have been considering the purchase of the Adrian furnace at Dubois, Pa. In both cases the furnaces if purchased would be completely dismantled and shipped out of the country in that form. Orders covering steel mill equipment last week were confined largely to miscellaneous repair work, there being no outstanding contracts recorded for new and complete installations.

Seattle—Turnover of equipment and miscellaneous items is increasing. Multonomah county, Oregon, has opened bids for a rock crushing plant, Link-Belt Co. being low for conveyors, King Bros., Portland, for buckets, Balzer Machine Co. and Howard Cooper Co., combined bid low for a new crusher and F. J. Gregoire, Portland, low for constructing the plant. Ederer Engineering Co., Seattle, has the contract for furnishing ten electric hoists and machinery for Tainter gates at Seattle's Landsburg dam.

Indianapolis—J. D. Adams Mfg. Co. here has shipped 96 road graders to all parts of the country, involving expenditure of approximately $460,000 by the federal government to provide modern equipment for new CCC camps.

Construction and Enterprise

Pennsylvania

ALLENTOWN, PA.—General contractors' bids have been opened by Ludlow Mfg. Associates, 80 Federal street, Boston, on a 7-story textile mill here.

ALLENTOWN, PA.—J. E. Barbour Corp., Ludlow, Mass., wil soon let contract for a 5-story, 80 x 140-foot, factory addition.

BETHLEHEM, PA.—City has been alloted federal fund of $115,000 for construction of a generating plant.

CORRY, PA.—City, G. Miller mayor, plans municipal light and power plant, costing about $28,500.

DOWNINGTOWN, PA.—Downington Paper Co. is contemplating erection of a large plant building.

SHENANDOAH, PA.—Philadelphia & Reading Coal & Iron Co., N. Harrison, superintendent, plans rebuilding blacksmith, carpentry and machine shops recently damaged by fire.

Ohio

EDGERTON, O.—Town has received PWA loan of $60,000 for a generating plant.

NELSONVILLE, O.—Southern Ohio Electric Co., Floodwood, O., is planning to erect an addition to its generating station near here. Cost is estimated at $250,000.

PIQUA, O.—Fire recently damaged the Hogle Boiler Repair Shop, owned by Dwight Hogle.

SPRINGFIELD, O.—City has been granted PWA loan of $370,000 for construction of waterworks system.

TOLEDO, O.—Work has started on a new $100,000 plant, 170 x 200 feet for the Toledo Stamping & Mfg. Co., Edwin Tasker president. Jeremiah Bingham is financing the building of this factory and will lease it to the Toledo Stamping company.

WAUSEON, O.—Village has $72,000 available for construction of sewage plant.

Michigan

BAY CITY, MICH.—Delbert Fortney, Mt. Pleasant, Mich., representing the Strange & Fortney Oil Co., has acquired a site here and it is reported that erection of a petroleum cracking plant, involving an expenditure of about $350,000, is under consideration.

PONTIAC, MICH.—Pontiac Motor Co. is considering reopening its foundry.

DETROIT—Kelsey-Hayes Wheel Co., 3600 Military avenue, is re-equipping a foundry for automotive work.

DETROIT—Sal-Way Heat Treating

Co., 624 West Elizabeth street, has been incorporated to engage in metal processing business, by Theodore G. Trocke, 18455 Lenore avenue.

MONROE, MICH.—City clerk is taking figures on flood water pumping station equipment, and sludge digestion tank equipment for the sewage plant. Bids are due May 27.

SAGOLA, MICH. — Northern Saw Mill Co., subsidiary of Sawyer-Goodman Co., Marinette, Wis., will rebuild shingle manufacturing plant recently damaged by fire.

Connecticut

MANCHESTER, CONN.—H. Dragat & Sons, 575 Windsor street, Hartford, Conn., plan to erect a warehouse for paper and machinery storage. Estimated cost $28,000.

Massachusetts

HOLYOKE, MASS. — Chemical Paper Mfg. Co., plans hydroelectric plant for paper manufacturing, estimated to cost $120,000. R. L. Bosworth, engineer.

HAVERHILL, MASS.—Lennox & Briggs Leather Co. is planning to install motors and controls, conveyors, etc., in connection with proposed rebuilding of tannery, recently damaged by fire. (Noted April 15).

New York

BROOKLYN, N. Y.—Signal supply officer, army base, will take bids June 3, circular 126, on gasoline engine-driven power units, 10-kva., in lots of 3, 4 or 5.

BUFFALO—A new type annealing furnace, representing an investment of $40,000, is being installed in the plant of the Madison Wire Co., 550 Abbott road.

PORT BYRON, N. Y.—Village will soon take bids for water supply system, including installation of 1,200,000-gallon storage tank. Estimated cost $75,000. Solomon & Kies, 257 Broadway, Troy, N. Y., engineers.

New Jersey

BRIDGETON, N. J.—Owens-Illinois Glass Co., 965 Wall street, Toledo, O., is taking bids on materials for erection of a factory building here.

CAMDEN, N. J.—Campbell Soup Co. is erecting a plant addition here.

LONG BRANCH, N. J.—Monmouth Memorial hospital is having plans prepared by Epple & Kahrs, 17 Washington street, Newark, N. J., for constructing laundry and power plant. Cost estimated at $69,000.

Illinois

CHICAGO—Chicago Printed Spring Co., 2314 Logan boulevard, has plans for a $150,000 addition to its plant.

CHICAGO—Walgreen Co., 744 East Bowen avenue, plans installation of motors and controls, conveyors, electric hoists and other equipment in new multi-story drug and chemical plant unit. Cost is estimated at $250,000.

RAYMOND, ILL.—City is preparing plans for waterworks and distribution system, estimated to cost $52,000. Warren & Van Praag, Decatur, Ind., engineers.

Indiana

INDIANAPOLIS — Allied Truck Equipment Corp., 906 North Senate avenue, has leased 14,000 square feet of floor space to take care of increased business. Among products manufactured is an all-steel safety school bus body.

District of Columbia

WASHINGTON—Superintendent, St. Elizabeth's hospital, will take bids May 22, for one air compressor and air receiver.

WASHINGTON—Bureau of supplies and accounts, navy department, will take bids June 4, schedule 5117, motor generators, control appliances and spare parts, delivered at Portsmouth, N. H.

WASHINGTON—Bureau of supplies and accounts, navy department, will receive bids May 28, schedule 5118, one motor-driven grinding machine, delivered at Boston.

WASHINGTON—Bureau of supplies and accounts, navy deprtment, will open bids May 31, schedule 5092, two motor-driven metal cutting band saw machines; June 4, schedule 5120, four motor-driven, floor-type sensitive drilling machines, all delivered at Puget Sound, Wash.

WASHINGTON — District commissioners will take bids June 4 for furnishing and installing sewage pumps and equipment for sewage treatment plant at Blue Plains, D. C. Plans may be obtained from office of chief clerk, engineering department, room 427 District building.

WASHINGTON—Bureau of supplies and accounts, navy department, will take bids May 24 schedule 5101, one motor-driven, vertical lapping machine; May 28, schedule 5111, one motor-driven honing machine; schedule 5112, one motor-driven plain-type, internal grinding machine; schedule 5113, one motor-driven internal grinding machine; schedule 5114, one motor-driven automatic sizing, internal grinding machine; May 31, schedule 5080, one motor-driven automatic screw machine, all delivered at Philadelphia.

Mississippi

DUCK HILL, MISS.—Hathorm Lumber Co., R. L. Harger, Columbus, Miss., superintendent, will erect a 30,000-capacity saw mill near here, and will operate a dry kiln plant and planer mill.

Florida

PANAMA CITY, FLA.—City is planning to install motors and controls, electric hoists, conveyors, crane, loaders and other equipment in proposed new municipal dock warehouse and cotton compress plant. Appropriation of $550,000 is being secured through federal aid.

North Carolina

MT. AIRY, N. C.—P. Lester Hawks, box 333, wants the following reconditioned or good used equipment: Engine generator set, alternating current, 60 to 100 kilowatt, three-phase, 60-cycle, 220 volts, with relating attachments and parts; one 30, one 25, three 10 and two 5-horsepower motors; 250-horsepower, 150-pound pressure horizontal return tubular boiler.

South Carolina

ST. MATTHEWS, S. C.—Calhoun Lime Co., B. E. Bensen president, is con-

(*Please turn to Page* 89)

THIS MAN CAN DO THE WORK OF

TEN

WHEREVER men work in intense heat, your labor costs rocket upward. Medical figures show that a man is but 10% efficient when working in a temperature of 110°F. So, where work is done under intense heat, Coppus Heat Killers save many times their cost by saving your workers' efficiency. The Coppus Heat Killer is the only type which *directs* the air on the job—prevents recirculation.

COPPUS HEAT KILLERS
are made in two types.

VANO TYPE

The Coppus Vano Heat Killer is a light, portable cooler which directs a concentrated beam of air by means of a long diffuser. It is easily moved to concentrate on a particular job.

AEROPLANE TYPE

The Coppus Aeroplane Heat Killer moves large volumes of air at moderate speeds.

THE AIR CANNOT RE-ENTER THE BLOWER

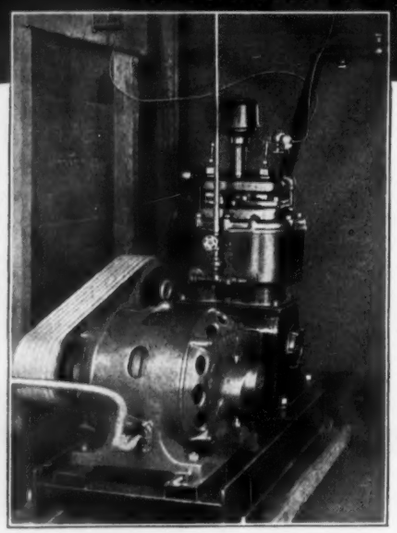
because of the specially designed enclosed fan, *exclusive* in Coppus Heat Killers. Also used for general ventilation, cooling, driving out foul air, removing dust, smoke, etc.

For complete information on these two types and their multiple uses other than cooling, write for Bulletin 160-2.

COPPUS
ENGINEERING CORPORATION
359 Park Avenue
Worcester, Mass.
A Cooling Fan For Every Hot Job!
1946

"CURTIS COMPRESSOR enables one man to do the work of five"

*writes W. H. Placke, President, The Reliable Foundry Co., Dayton, O.



The Reliable Foundry Company uses air to operate chipping hammers, pneumatic grinding wheels and for sand blasting. Mr. W. H. Placke, President of the company, reports:

"Our Curtis Compressor enables one man with a chipping hammer to do work that a gang of five men couldn't do as well by hand.

Curtis Provides Air Pressure at Low Cost

"Running every working day for eight hours, our entire compressed air cost is only $3.33 a day. This includes 20% depreciation, interest on our investment, incidentals and cost of electric power at our comparatively high rate of 3c per K.W.H.

"Purchased in February, 1934, during seven months' operation in our foundry, it hasn't been touched except for oiling.

"This equipment of such reliable design and make certainly fills every need."

In every type of industry, Curtis Compressors have the reputation for dependability, efficiency and ability to deliver compressed air at low cost, with important savings in time and labor. Made by a company that has specialized in compressor building for over 81 years.

*A complete report by Mr. Placke will be of vital interest to production executives. Write for your copy today.

Curtis Features

Carbon-Free Valves — Timken Bearings
Cooled Air Intake — Centro-Ring Oiling

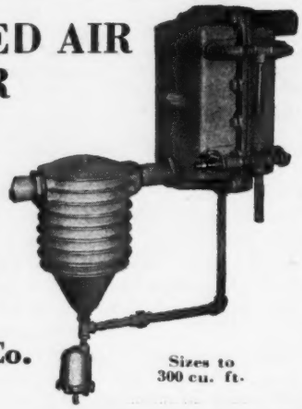
Curtis Pneumatic Machinery Co., 1996 Kienlen Avenue, St. Louis, Mo.; — New York City — Chicago — San Francisco

CURTIS COMPRESSORS—AIR HOISTS—I-BEAM CRANES and TROLLEYS

COMPRESSED AIR DRYER

Thoroughly extracts water and oil from compressed air by a simple scientific method. Eliminates operating troubles in all pneumatic equipment. Installed by many leading industrial plants.

Cost nothing to operate—No moving parts to wear out—Automatic in service.

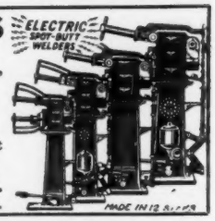


Sizes to 300 cu. ft.

Ruemelin Mfg. Co.
1572 First St.
Milwaukee, Wis.

EISLER SPOT WELDERS

½ TO 100 K. V. A.
SAW BRAZING MACHINES, BUTT, WIRE, PORTABLE AND SPECIAL WELDERS
Welders as low as $35
Submit Samples for Test. No Obligations
WELDER CATALOG 35W Sent Upon Request



EISLER ENGINEERING CO., INC.
764 So. 13th St. NEWARK, N. J.
Dealers Wanted. Write Mr. Chas. Eisler, Pres.

Producer Gas Systems

WE GUARANTEE RESULTS

Using Bituminous and Anthracite Coal, Raw and Scrubbed Gas, for Displacing Oil, City and Natural Gas Coal and Coke in furnaces of all descriptions.

Flinn & Dreffein Co.
308 W. Washington St. Chicago, Ill.

SC&H Furnaces are made for annealing, case hardening, carburizing, forging, cyaniding, lead hardening & oil tempering.

STRONG CARLISLE & HAMMOND

SC&H Furnaces are built in all sizes of Oven, Pot, Continuous, and Special Types for Electric, Oil or Gas application.

1400 W. 3rd St., Cleveland, O.

Moore Rapid LECTROMELT Furnaces

Standard Sizes 25 lbs. to 100 Tons Capacity
Most Rapid and efficient for making
Tool Steels, Alloy Steels, Forging Steels
Steel Castings, Malleable Iron, Grey Iron, Carbide, Ferro-Alloys etc.

PITTSBURGH LECTROMELT FURNACE CORP.
P.O. BOX 1257, FOOT OF 32ND ST. PITTSBURGH, PA. U.S.A.

JIGS — FIXTURES — SPECIAL MACHINES— PUNCHES—DIES—*"to your measure"!*

Let our trained engineers apply our 28 years' experience to your equipment problem. Our successes in other plants of all types, and proved methods assure a solution of any question involving production machinery. Write us in detail without obligation.

THE COLUMBUS DIE, TOOL AND MACHINE CO.
COLUMBUS, OHIO

flashes

NEWS, IDEAS AND INFORMATION ABOUT PRODUCTION WELDING OF INTEREST TO EVERY MANUFACTURER WHO WANTS BETTER, FASTER PRODUCTION AT LOWER COST

DO YOU GET YOUR COPY EACH MONTH?

(Continued from Page 87)

sidering installing additional equipment, including rotary dryers, etc.

Virginia

CHUCKATUCK, VA.—Saw mill and planing mill owned by B. W. Godwin recently sustained severe damages by fire.

COVINGTON, VA.—Standard Motor Construction Co., Jersey City, N. J., has acquired plant of Covington Machine Co. which it will operate to manufacture parts for diesel engines.

Missouri

MANSFIELD, MO.—J. M. Bohannon is contemplating erecting a canning plant.

ST. LOUIS—Iron City Furnace & Foundry Co. has been incorporated by C. J. Scullin, 5222 Bancroft street, and Raymond H. Albers.

ST. LOUIS—City, board of public service, plans installation of new boilers and power plant equipment, pump discharge line, and basin alterations and repair to Chain of Rocks pumping station. Cornelius M. Daily is water commissioner.

WENTZVILLE, MO.—City, John A. Niemhueser mayor, receives bids May 28, for water distribution system.

Arkansas

FORT SMITH, ARK.—City will take bids about June 15 for $1,500,000 water supply system and 8,000,000-gallon filtration plant. W. R. Holway, consulting engineer, Tulsa, Okla.

Oklahoma

GUTHRIE, OKLA.—City receives bids May 29 for constructing a waterworks system, including installation of 300,000-gallon tank on 110-foot steel tower and a 200,000-gallon tank on a 118-foot steel tower, meters, motors, manual control chlorinator, etc.

Texas

ABILENE, TEX.—East Texas chamber of commerce, Hubert Harrison manager, is negotiating for establishment of a $5,000,000 wood pulp paper mill in east Texas.

BOGATA, TEX.—City has PWA loan of $73,000 for waterworks system.

HOUSTON, TEX.—August A. Busch & Co., 122 Collins place, plans expending $65,000 for enlarging plant and installing additional equipment.

STOCKDALE, TEX.—City, Merrill W. Smith mayor, receives bids May 25 for waterworks, including elevated tank and tower and pumping equipment. H. N. Tully, Seguin, Tex., engineer.

Wisconsin

CHIPPEWA FALLS, WIS.—Chippewa Falls Woolen Mills Co., North Prairie street; has awarded contracts for construction of a 2-story factory addition, 27 x 55 feet, and a 1-story boiler room, 18 x 34 feet. Carl Volkman, McGrath building, Eau Claire, Wis., is architect.

EAU CLAIRE, WIS.—Wisconsin Steam Corp. has received authority from state public service commission to build and operate a central heating plant and distributing system, estimated to cost $200,000. S. P. Hall is vice president and local manager.

SHULLSBURG, WIS.—Vinegar Hill Zinc Co., Platteville, Wis., has started work on a new concentrating zinc ore mill near here.

TREMPEALEAU, WIS.—W. S. Woods, consulting engineer, LaCrosse, Wis., has been selected to handle proposed new waterworks plant and system, estimated to cost $50,000. H. E. Clark is chairman of water commission.

Minnesota

CHASKA, MINN.—American Crystal Sugar Co. is building an addition to its power plant and will install three new boilers, stokers and other equipment, to cost $100,000.

GRAND MARAIS, MINN.—Village, B. A. Rude clerk, has voted $90,000 bonds for waterworks system.

MINNEAPOLIS—Aerodyn Co., Main street and Second avenue, is planning to rebuild its factory recently damaged by fire.

MINNEAPOLIS—Cowin & Co., 940 East Henn avenue, distributors of reinforcing steel and other steel products, are building a 1-story warehouse and plant addition, 42 x 59 feet.

MINNEAPOLIS — Fleischmann Malting Co. has awarded contract for alteration and addition to its malting plant at 1001 Delaware street, Southeast.

MINNEAPOLIS — Webster Engi-

(Please turn to Page 91)

Steel AS YOU WANT IT

DRILL ROD
COLD DRAWN
SHAPES

For 37 years we have been drawing steel to our customers' specifications. We provide experience, accuracy, the best of finish and the heat treatment just right for the job, an "efficiency" product.

A chart of decimal equivalents will gladly be sent you upon request.

KIDD DRAWN STEEL CO.
Aliquippa, Pa.
(Pittsburgh District) Phone: Aliquippa 196.

We Put The Cart BEHIND The Horse

Many pipe salesmen try to sell you their brand of pipe before they know your problems. We do it the other way—analyze your problems first, and then recommend Reading **Genuine Puddled Wrought Iron** Pipe ONLY where its use will prove a saving for you.

For Complete Information Write

READING IRON COMPANY
PHILADELPHIA

SCIENCE AND INVENTION HAVE NEVER FOUND A SATISFACTORY SUBSTITUTE FOR GENUINE PUDDLED WROUGHT IRON

Simonds Cut Gears

SPUR—BEVEL—MITRE & WORM—RACK
CUT TEETH—SPECIAL MACHINERY . .

Treated gears—cut and finished by Simonds—last longer, eliminate costly shut downs and work smoother and more efficiently.

Made in all sizes for any service and TREATED to meet your requirements.

Also—
Ramsey Silent Chain Drives : Gates Vulco Rope Drives : All Steel Silent Pinions : Bakelite Silent Pinions

The SIMONDS MANUFACTURING Co.
25th STREET — PITTSBURGH, PA.

PERIN ENGINEERING CO., Inc.
CONSULTING ENGINEERS

Investigations, Reports, Development of Raw Materials, Ore Sintering, Coke Ovens, Blast Furnaces, Open Hearth and Electric Steel Plants, Rolling Mills, Power Plants, Cement Plants

535 Fifth Ave. — NEW YORK
Cable Address — PERINESTEP

WELDED STEEL RINGS

Rolled from bar stock—Flats, Angles, Tees and Channels—in any diameter in proportion to size of material used.

KING FIFTH WHEEL COMPANY
5027 Beaumont Avenue - - Philadelphia, Pa.

WELDING WIRE

Highest Quality and Service Guaranteed

The Seneca Wire & Mfg. Company
FOSTORIA, OHIO

HOLCROFT & COMPANY

LEADERS IN BUILDING AND DESIGNING ELECTRIC AND COMBUSTION FURNACES, KILNS AND OVENS.
HOME OFFICE: DETROIT—BRANCHES: CHICAGO, PHILADELPHIA
CANADA: WALKER METAL PRODUCTS, LTD., WALKERVILLE, ONT.

BUILT BY HOLCROFT & COMPANY DETROIT-MICH.

BELMONT IRON WORKS
PHILADELPHIA — NEW YORK — EDDYSTONE

Engineers - Contractors - Exporters
STRUCTURAL STEEL — BUILDINGS & BRIDGES
RIVETED—ARC WELDED
BELMONT INTERLOCKING CHANNEL FLOOR
Write For Catalogue
Main Office—Phila. Pa. New York Office—44 Whitehall St.

THE OHIO STRUCTURAL STEEL CO.
NEWTON FALLS, OHIO

Engineers, Fabricators & Erectors of Steel Construction

RYERSON~STEEL

Immediate shipment of all steel and allied products including bars, structurals, sheets, plates, special alloy, and tool steels, Allegheny metal, babbitt, boiler tubes and fittings, welding rod and equipment, metal working tools, etc. Write for the Ryerson Journal and Stock List.

Joseph T. Ryerson & Son, Inc., Chicago, Milwaukee, St. Louis, Cincinnati, Detroit, Cleveland, Buffalo, Boston, Philadelphia, Jersey City

TUNGSTEN & CHROME
MAGNET STEELS
ALSO HIGH SPEED STAINLESS SPECIAL ALLOYS & CARBON TOOL STEELS
Latrobe Electric Steel Co.
LATROBE, PA.

PICKLING TANK LINING

CEILCOTE will acid-proof and leak-proof your tanks whether they are of wood, stone, steel, concrete or brick construction. All new tanks should be lined with CEILCOTE and the old are renewed for years of additional service.

CEILCOTE is in use by leading steel plants and allied industries in this country, Canada and Europe. Upon request, we will refer you to Users nationally known.

Do not be mislead into using spurious materials, which will contaminate the solutions and adhere to the pickling parts.

Ceilcote is patented in U. S. Patent Office and also foreign countries.

THE CEILCOTE COMPANY
Consulting & Research Engineers
Rockefeller Building — Cleveland, O.

SCREENS of Perforated Metal

The Harrington & King PERFORATING Co.
5634 Fillmore St., Chicago, Ill.
New York Office—114 Liberty St.

(*Concluded from Page* 89)

neering Co. has been incorporated to manufacture mechanical appliances, by H. P. Webster, 1771 Girard avenue, south, C. M. Webster and W. L. Bush.

MINNEAPOLIS—Champion Motors Co., 2901 East Hennepin avenue, has been organized by Stanley G. Gray, president and treasurer, and Earl Du Monte, vice president and secretary, to manufacture outboard motors.

ST. PAUL — Brown Sheet Iron & Steel Co., manufacturer of steel tanks, furnaces and other steel products, has awarded contracts for alterations to factory at 964 Berry avenue.

ST. PAUL — St. Paul Hydraulic Hoist Co., 292 Walnut street, manufacturer of hydraulic hoists and steel body equipment for trucks, will install considerable new machinery and equipment in its plant on University avenue, southeast, in Minneapolis.

Iowa

CEDAR RAPIDS, IOWA — Quaker Oats Co., George Laird, manager, will soon award contracts for construction of a grain elevator to cost $150,000. The elevator will have a capacity of 750,000 bushels. Considerable machinery, including conveying equipment, will be installed.

DES MOINES, IOWA—V. H. Ede, 1112 Jefferson avenue, will establish a factory for the manufacture of Roto-Rooters, a sewer opening device.

DUBUQUE, IOWA—Dubuque Star Brewing Co., Joseph Rhomberg vice president and general manager, will build a 3-story brewery addition to be used for storage purposes. About 40 new steel storage tanks will be installed.

IOWA FALLS, IOWA—D. C. Hadley and H. L. Ibach are building a 1-story millwork and cabinet shop, 20 x 40 feet, and will install complete woodworking machinery and equipment.

WATERLOO, IOWA—John Deere Tractor Co., Miles street, manufacturer of farm machinery, has awarded contract for construction of plant addition, costing $50,000.

Nebraska

HARTINGTON, NEBR.—Nebraska Fibre Corp. has awarded contracts for construction of a fibre manufacturing plant to cost $25,000, and will include installation of considerable machinery and equipment.

Montana

BOZEMAN, MONT.—Bozeman Electric & Acetylene Welding Works will soon start work in rebuilding garage and machine shop recently damaged by fire. (Noted May 13)

Pacific Coast

BERKELEY, CALIF. — American Forge Co., 25 Tehama street, San Francisco, plans installation of motors and controls, conveyors, and electric hoists in plant to be erected here. Cost estimated at close to $100,0000.

LODI, CALIF.—City has secured fund of $600,000 from PWA for new hydroelectric power plant. Installation will include a 1375-kilowatt generator unit. F. C. Herman, Merchants Exchange building, and Walter L. Huber, Crocker First National Bank building, both San Francisco, are consulting engineers.

PORTLAND, OREG.—M. C. La Bertew, superintendent, Spokane, Portland, & Seattle railway, 1101 Northwest Hoyt street, will open bids May 22 for supplies and repairs to rolling stock, including castings, forgings, tubes, bolts, etc.

CENTRALIA, WASH.—City officials plan $45,000 expenditure for four wells and pumping units and chlorination plant.

LONGVIEW, WASH.—M. & M. Plywood Corp. announces a $100,000 expansion program to include installation of a hydraulic hot plate glue process.

MT. VERNON, WASH.—L. R. White manager, Washington Water Service Co., announces proposed $10,000 expenditure for enlarged pumping plant.

SEATTLE—Considerable machinery and equipment of the Brace Lumber Co. was damaged by fire May 9.

SEATTLE—City is expending $33,000 to repair damage caused by fire at the Eastlake avenue steam power plant.

SPOKANE—Mayor Arthur Burch announces work on the proposed municipal hydroelectric plant and dam on the Spokane river, estimated to cost $687,000, will start as soon as water conditions permit.

TUBE MILL EQUIPMENT OF MODERN DESIGN

Let us know your problems and we will be glad to be of service to you.

40 years experience in building tube mills.

TAYLOR-WILSON MANUFACTURING CO.
MAIN OFFICE and WORKS
500 Thomson Ave.
McKEES ROCKS, PA.

WICKWIRE SPENCER Perforated Metals are the result of study and research in both general requirements and specific applications where unusual treatment is needed in any degree. Pattern, size of holes, kind and thickness of metal are all considered in relation to the work to be done—all these assuring the maximum service life. Consult Wickwire Spencer engineers—it will cost you nothing and may save you much in avoiding unnecessary replacements.

Wickwire Spencer Steel Company, 39 East 42nd Street, New York City; Buffalo, Chicago, Detroit, Philadelphia, Tulsa, Worcester; *Pacific Coast Headquarters*: San Francisco; *Warehouses*: Los Angeles, Portland, Seattle. *Export Sales Department*: New York City.

WICKWIRE SPENCER
perforated metals

NIAGARA
BRAND
FERRO-ALLOYS

FERRO-SILICON
ALL GRADES

FERRO-CHROMIUM
HIGH CARBON

FERRO-CHROMIUM
LOW CARBON

SILICO-MANGANESE

FERRO-MANGANESE

Always
DEPENDABLE, UNIFORM,
SUPERIOR

PITTSBURGH METALLURGICAL
COMPANY, INCORPORATED
NIAGARA FALLS, NEW YORK

WEIRTON

Producers of Pig Iron; Open Hearth Steel; Billets—Slabs—Sheet Bars—Skelp; Angles, Beams and Channels; Round, Square and Flat Bars; Rails—Steel Plates—Tie Plates—Track Spikes—Splice Bars; Reinforcing Bars; Coke Tin Plate; Canners Special Cokes—Best Cokes—Charcoals; Lacquered Tinplate; Tin Mill Black Plate (All Finishes); Lacquered Black Plate; Copper Bearing Terne Plate; Hot and Cold Rolled Strip Steel and Strip Steel Sheets; High Finish Sheets; Long Terne Sheets (Common and Special Finishes); Galvanized, Black and Blue Annealed Sheets; Corrugated Sheets, V Crimp Sheets, Roll Roofing; Single Pickled, Full Finished and Auto Body Sheets; Coke—Tar—Benzol—Toluol—Ammonium Sulphate.

WEIRTON STEEL CO.
WEIRTON, W. VA.
Division of National Steel Corporation
Sales Offices in All Principal Cities

SAVE WITH STEEL

HANNA
PIG IRON

BRANDS:
Buffalo—Detroit—Susquehanna
GRADES:
Foundry—Malleable
Silvery—Ferro-Silicon

The HANNA FURNACE CORP.
MERCHANT PIG IRON DIVISION
OF NATIONAL STEEL CORP.
Buffalo, New York Detroit, Mich.
New York Philadelphia Boston

SHENANGO-PENN
S M P Co.
Ingot Molds of any size, shape or quantity
Manufactured by
SHENANGO-PENN MOLD CO., PITTSBURGH, PA.

Use RODINE For Pickling
and Save at Least 30c Per Ton
AMERICAN CHEMICAL PAINT CO.
Ambler, Pa.

BROOKE
PIG IRON
E. & G. BROOKE IRON CO.
BIRDSBORO, PENNA.

MFGRS OF HIGH GRADE
FOUNDRY
BASIC
GREY FORGE
MALLEABLE
BESSEMER
LOW PHOS.

SMALL ELECTRIC STEEL CASTINGS
(Capacity 500 Tons per Month)
WEST STEEL CASTING CO.
CLEVELAND OHIO, U. S. A.
"He Profits Most Who Serves Best"
Better Steel Castings

CERTIFIED
MALLEABLE IRON CASTINGS
Detachable Sprocket Chain
Riveted Sprocket Chain
Malleable Washers, etc.
PEORIA MALLEABLE CASTINGS CO.
FT. ALEXANDER ST. PEORIA, ILLINOIS

Employment Service
SALARIED POSITIONS
$2,500 to $25,000
This thoroughly organized advertising service of 25 years' recognized standing and reputation carries on preliminary negotiations for positions of the caliber indicated, through a procedure individualized to each client's personal requirements. Several weeks are required to negotiate and each individual must finance the moderate cost of his own campaign. Retaining fee protected by a refund provision as stipulated in our agreement. Identity is covered and, if employed present position protected. If you have actually earned over $2,500, send only name and address for details. R. W. Bixby, Inc., 110 Delward Bldg., Buffalo, N. Y.